

# FCC Verification

## According to FCC Part 15

Applicant Name : CREVIS CO., LTD.

Address : 29-4, Gigok-ro, Giheung-gu, Yongin-si,  
Gyeonggi-do, Korea

Telephone : +82-31-899-4599

Declares that Product : FnIO R-Series Network Remote I/O System

Basic Model Name : RN-9685, RT-1218, RT-2328, RT-1228, RT-2318,  
RT-1238, RT-3114, RT-4114, RT-7511, RT-3424,  
RT-4424, RT-4524, RT-7408, RT-3118, RT-4118,  
RT-7111, RT-7008, RT-3428 and RT-4428

Variant Model Name : RT-3134, RT-3154, RT-3214, RT-3234, RT-3254,  
RT-3444, RT-3464, RT-3624, RT-3644, RT-3664,  
RT-3138, RT-3158, RT-3218, RT-3238, RT-3258,  
RT-3448, RT-3468, RT-3628, RT-3648, RT-3668,  
RT-4134, RT-4154, RT-4214, RT-4234, RT-4254,  
RT-4444, RT-4464, RT-4624, RT-4644, RT-4664,  
RT-4544, RT-4564, RT-4138, RT-4158, RT-4218,  
RT-4238, RT-4258, RT-4448, RT-4468, RT-4628,  
RT-4648 and RT-4668

Report Number : CTK-2014-00054

*This device complies with Part 15 of the FCC rules. Operations 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.*

**Test Laboratory:**

**CTK Co., Ltd.**

**386-1, Ho-Dong, Cheoin-gu, Yongin-si, Gyunggi-do, 449-100, Korea**

**Registration Number: 805871**

**Tel : +82-31-339-9970**

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**Responsible Party:**

**Company Name : CREVIS CO., LTD.**

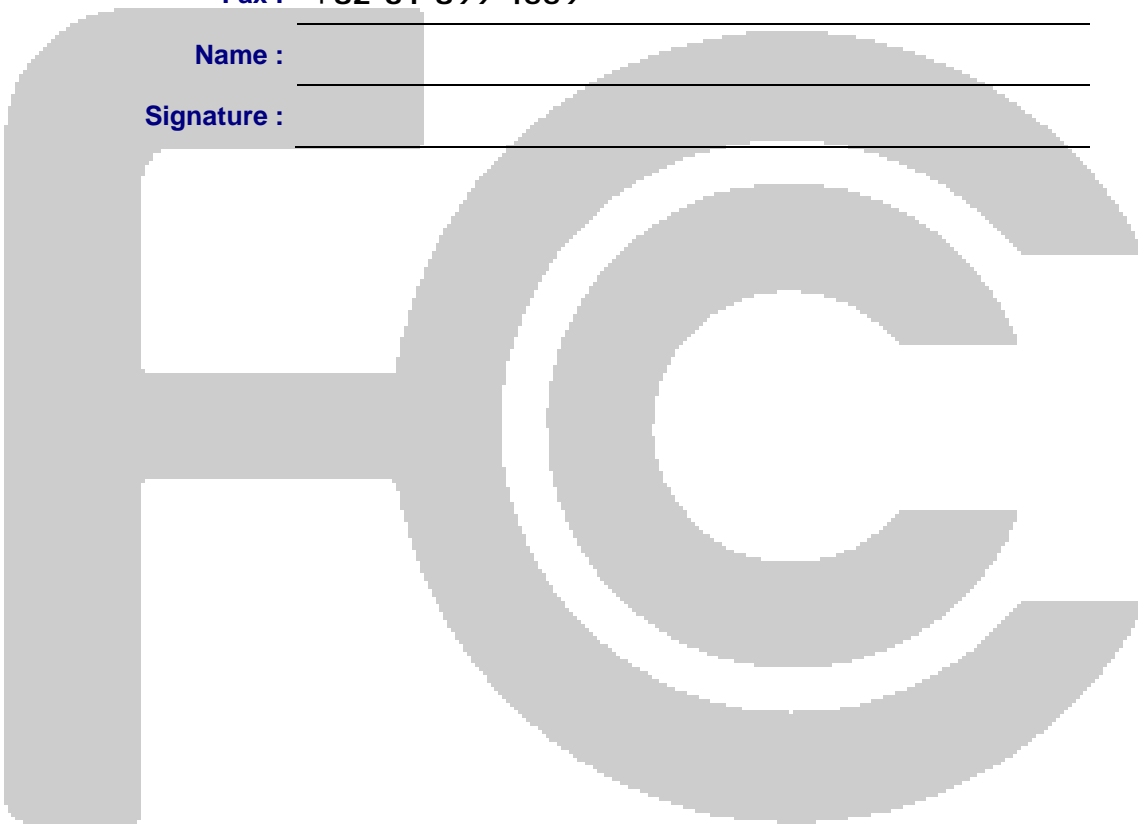
**Company Address : 29-4, Gigok-ro, Giheung-gu, Yongin-si,  
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**Phone : +82-31-899-4587**

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**Name :**

**Signature :**





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## EMC TEST REPORT For FCC

Test Report No. : CTK-2014-00054

Date of Issue : 2014-01-14

Kind of Product : FnIO R-Series Network Remote I/O System

Basic Model/Type No. : RN-9685, RT-1218, RT-2328, RT-1228, RT-2318, RT-1238, RT-3114, RT-4114, RT-7511, RT-3424, RT-4424, RT-4524, RT-7408, RT-3118, RT-4118, RT-7111, RT-7008, RT-3428 and RT-4428

Variant Model/Type No. : RT-3134, RT-3154, RT-3214, RT-3234, RT-3254, RT-3444, RT-3464, RT-3624, RT-3644, RT-3664, RT-3138, RT-3158, RT-3218, RT-3238, RT-3258, RT-3448, RT-3468, RT-3628, RT-3648, RT-3668, RT-4134, RT-4154, RT-4214, RT-4234, RT-4254, RT-4444, RT-4464, RT-4624, RT-4644, RT-4664, RT-4544, RT-4564, RT-4138, RT-4158, RT-4218, RT-4238, RT-4258, RT-4448, RT-4468, RT-4628, RT-4648 and RT-4668

Applicant : CREVIS CO., LTD.

Applicant Address : 29-4, Gigok-ro, Giheung-gu, Yongin-si, Gyeonggi-do, Korea

Manufacturer : CREVIS CO., LTD.

Manufacturer Address : 29-4, Gigok-ro, Giheung-gu, Yongin-si, Gyeonggi-do, Korea

Contact Person : Jun-Ho, Park

Telephone : +82-31-899-4587

Received Date : 2013-12-30

Test Data : 2013-12-27

Test Results :  In Compliance  Not in Compliance

The test results presented in this report relate only to the object tested.

Tested by

Reviewed by

Yoo Yoo Sang  
EMC Test Engineer  
Date: 2014-01-14

Young-Kug Song  
EMC Technical Manager  
Date: 2014-01-14



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## REPORT REVISION HISTORY

Date	Revision	Page No
2014-01-14	Issued (CTK-2014-00054)	All

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## 1.0 General Product Description

No.	ITEM	APPLICATION	
1	Kind of Product	FnIO R-Series Network Remote I/O System	
2	Basic Model/Type No.	RN-9685, RT-1218, RT-2328, RT-1228, RT-2318, RT-1238, RT-3114, RT-4114, RT-7511, RT-3424, RT-4424, RT-4524, RT-7408, RT-3118, RT-4118, RT-7111, RT-7008, RT-3428 and RT-4428	
3	Variant Model/Type No.	RT-3134, RT-3154, RT-3214, RT-3234, RT-3254, RT-3444, RT-3464, RT-3624, RT-3644, RT-3664, RT-3138, RT-3158, RT-3218, RT-3238, RT-3258, RT-3448, RT-3468, RT-3628, RT-3648, RT-3668, RT-4134, RT-4154, RT-4214, RT-4234, RT-4254, RT-4444, RT-4464, RT-4624, RT-4644, RT-4664, RT-4544, RT-4564, RT-4138, RT-4158, RT-4218, RT-4238, RT-4258, RT-4448, RT-4468, RT-4628, RT-4648 and RT-4668	
4	Dimensions (mm)	R9685	54.0 mm x 99.0 mm x 70.0 mm
		RT-1218	12.0 mm x 99.0 mm x 70.0 mm
		RT-2328	12.0 mm x 99.0 mm x 70.0 mm
		RT-1228	12.0 mm x 99.0 mm x 70.0 mm
		RT-2318	12.0 mm x 99.0 mm x 70.0 mm
		RT-1238	12.0 mm x 99.0 mm x 70.0 mm
		RT-3114	12.0 mm x 99.0 mm x 70.0 mm
		RT-4114	12.0 mm x 99.0 mm x 70.0 mm
		RT-7511	12.0 mm x 99.0 mm x 70.0 mm
		RT-3424	12.0 mm x 99.0 mm x 70.0 mm
		RT-4424	12.0 mm x 99.0 mm x 70.0 mm
		RT-4524	12.0 mm x 99.0 mm x 70.0 mm
		RT-7408	12.0 mm x 99.0 mm x 70.0 mm
		RT-3118	12.0 mm x 99.0 mm x 70.0 mm
		RT-4118	12.0 mm x 99.0 mm x 70.0 mm
		RT-7111	12.0 mm x 99.0 mm x 70.0 mm
		RT-7008	12.0 mm x 99.0 mm x 70.0 mm
RT-3428	12.0 mm x 99.0 mm x 70.0 mm		
RT-4428	12.0 mm x 99.0 mm x 70.0 mm		



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5	Mobility	<input type="checkbox"/> Table-top <input type="checkbox"/> Floor-standing <input checked="" type="checkbox"/> Built-in <input type="checkbox"/> Portable	
6	Maximum Clock Frequency	25 MHz	
7	Electrical Ratings	R9685	Input: DC 24 V (System Power, Field Power)
			Output: DC 5 V (System Power), DC 24 V (Field Power)
		RT-1218	Input: -
			Output: DC 5 V, Max. 0.11 A
		RT-2328	Input: -
			Output: DC 5 V, Max. 0.12 A
		RT-1228	Input: -
			Output: DC 5 V, Max. 0.12 A
		RT-2318	Input: -
			Output: DC 5 V, Max. 0.12 A
		RT-1238	Input: -
			Output: DC 5 V, Max. 0.11 A
		RT-3114	Input: -
			Output: DC 5 V, Max. 0.14 A
		RT-4114	Input: -
			Output: DC 5 V, Max. 0.14 A
		RT-7511	Input: DC 24 V (System Power, Field Power)
			Output: DC 5 V (System Power), DC 24 V (Field Power)
		RT-3424	Input: -
			Output: DC 5 V, Max. 0.14 A
RT-4424	Input: -		
	Output: DC 5 V, Max. 0.14 A		
RT-4524	Input: -		
	Output: DC 5 V, Max. 0.14 A		
RT-7408	Input: -		
	Output: -		
RT-3118	Input: -		
	Output: DC 5 V, Max. 0.14 A		
RT-4118	Input: -		
	Output: DC 5 V, Max. 0.14 A		
RT-7111	Input: DC 24 V (System Power, Field Power)		
	Output: DC 5 V (System Power), DC 24 V (Field Power)		
RT-7008	Input: -		
	Output: -		
RT-3428	Input: -		
	Output: DC 5 V, Max. 0.14 A		
RT-4428	Input: -		
	Output: DC 5 V, Max. 0.14 A		
8	Test Voltage / Frequency	Voltage: DC 24 V	
		Frequency: -	



## 1.1 Model Differences

Model No.	Description
<b>RT-3114</b>	<b>Analog Input, Current 0 ~ 20 mA, 12bits, 4channels, 10RTB (and 4 ~ 20 mA)</b>
RT-3134	Analog Input, Current 0 ~ 20 mA, 14bits, 4channels, 10RTB (and 4 ~ 20 mA)
RT-3154	Analog Input, Current 0 ~ 20 mA, 15bits, 4channels, 10RTB (and 4 ~ 20 mA)
RT-3214	Analog Input, Current 0 ~ 20 mA, 12bits, 4channels, 10RTB (and 4 ~ 20 mA)
RT-3234	Analog Input, Current 0 ~ 20 mA, 14bits, 4channels, 10RTB (and 0 ~ 20 mA)
RT-3254	Analog Input, Current 0 ~ 20 mA, 15bits, 4channels, 10RTB (and 0 ~ 20 mA)

Model No.	Description
<b>RT-3424</b>	<b>Analog Input, Voltage 0 ~ 10 V, 12bits, 4channels, 10RTB</b>
RT-3444	Analog Input, Voltage 0 ~ 10 V, 14bits, 4channels, 10RTB
RT-3464	Analog Input, Voltage 0 ~ 10 V, 15bits, 4channels, 10RTB
RT-3624	Analog Input, Voltage 0 ~ 5 V, 12bits, 4channels, 10RTB
RT-3644	Analog Input, Voltage 0 ~ 5 V, 14bits, 4channels, 10RTB
RT-3664	Analog Input, Voltage 0 ~ 5 V, 15bits, 4channels, 10RTB

Model No.	Description
<b>RT-3118</b>	<b>Analog Input, Current 0 ~ 20 mA, 12bits, 8channels, 10RTB (and 4 ~ 20 mA)</b>
RT-3138	Analog Input, Current 0 ~ 20 mA, 14bits, 8channels, 10RTB (and 4 ~ 20 mA)
RT-3158	Analog Input, Current 0 ~ 20 mA, 15bits, 8channels, 10RTB (and 4 ~ 20 mA)
RT-3218	Analog Input, Current 0 ~ 20 mA, 12bits, 8channels, 10RTB (and 4 ~ 20 mA)
RT-3238	Analog Input, Current 0 ~ 20 mA, 14bits, 8channels, 10RTB (and 0 ~ 20 mA)
RT-3258	Analog Input, Current 0 ~ 20 mA, 15bits, 8channels, 10RTB (and 0 ~ 20 mA)

Model No.	Description
<b>RT-3428</b>	<b>Analog Input, Voltage 0 ~ 10 V, 12bits, 8channels, 10RTB</b>
RT-3448	Analog Input, Voltage 0 ~ 10 V, 14bits, 8channels, 10RTB
RT-3468	Analog Input, Voltage 0 ~ 10 V, 15bits, 8channels, 10RTB
RT-3628	Analog Input, Voltage 0 ~ 5 V, 12bits, 8channels, 10RTB
RT-3648	Analog Input, Voltage 0 ~ 5 V, 14bits, 8channels, 10RTB
RT-3668	Analog Input, Voltage 0 ~ 5 V, 15bits, 8channels, 10RTB

Model No.	Description
<b>RT-4114</b>	<b>Analog Output, Current 0 ~ 20 mA, 12 bits, 4 channels, 10RTB, (and 4 ~ 20 mA)</b>
RT-4214	Analog Output, Current 4 ~ 20 mA, 12 bits, 4 channels, 10RTB, (and 0 ~ 20 mA)
RT-4134	Analog Output, Current 0 ~ 20 mA, 14 bits, 4 channels, 10RTB, (and 4 ~ 20 mA)
RT-4234	Analog Output, Current 4 ~ 20 mA, 14 bits, 4 channels, 10RTB, (and 0 ~ 20 mA)
RT-4154	Analog Output, Current 0 ~ 20 mA, 15 bits, 4 channels, 10RTB, (and 4 ~ 20 mA)
RT-4254	Analog Output, Current 4 ~ 20 mA, 15 bits, 4 channels, 10RTB, (and 0 ~ 20 mA)

Model No.	Description
<b>RT-4424</b>	<b>Analog Input, Voltage 0 ~ 10 V, 12bits, 4channels, 10RTB</b>
RT-4624	Analog Input, Voltage 0 ~ 5 V, 12bits, 4channels, 10RTB
RT-4444	Analog Input, Voltage 0 ~ 10 V, 14bits, 4channels, 10RTB
RT-4644	Analog Input, Voltage 0 ~ 5 V, 14bits, 4channels, 10RTB
RT-4464	Analog Input, Voltage 0 ~ 10 V, 15bits, 4channels, 10RTB
RT-4664	Analog Input, Voltage 0 ~ 5 V, 15bits, 4channels, 10RTB





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Model No.	Description
<b>RT-4524</b>	<b>Analog Output, Voltage -10 ~ 10 V, 12 bits, 4 channels, 10RTB</b>
RT-4544	Analog Output, Voltage -10 ~ 10 V, 14 bits, 4 channels, 10RTB
RT-4564	Analog Output, Voltage -10 ~ 10 V, 15 bits, 4 channels, 10RTB

Model No.	Description
<b>RT-4118</b>	<b>Analog Output, Current 0 ~ 20 mA, 12 bits, 8 channels, 10RTB, (and 4 ~ 20 mA)</b>
RT-4218	Analog Output, Current 4 ~ 20 mA, 12 bits, 8 channels, 10RTB, (and 0 ~ 20 mA)
RT-4138	Analog Output, Current 0 ~ 20 mA, 14 bits, 8 channels, 10RTB, (and 4 ~ 20 mA)
RT-4238	Analog Output, Current 4 ~ 20 mA, 14 bits, 8 channels, 10RTB, (and 0 ~ 20 mA)
RT-4158	Analog Output, Current 0~ 20 mA, 15 bits, 8 channels, 10RTB, (and 4 ~ 20 mA)
RT-4258	Analog Output, Current 4 ~ 20 mA, 15 bits, 8 channels, 10RTB, (and 0 ~ 20 mA)

Model No.	Description
<b>RT-4428</b>	<b>Analog Input, Voltage 0 ~ 10 V, 12bits, 8channels, 10RTB</b>
RT-4628	Analog Input, Voltage 0 ~ 5 V, 12bits, 8channels, 10RTB
RT-4448	Analog Input, Voltage 0 ~ 10 V, 14bits, 8channels, 10RTB
RT-4648	Analog Input, Voltage 0 ~ 5 V, 14bits, 8channels, 10RTB
RT-4468	Analog Input, Voltage 0 ~ 10 V, 15bits, 8channels, 10RTB
RT-4668	Analog Input, Voltage 0 ~ 5 V, 15bits, 8channels, 10RTB

### 1.2 Device Modifications

The following modifications were necessary for compliance:

Not applicable



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## 1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

Peripheral Devices

Device	Model No.	Serial No.	Manufacturer
Notebook Computer	NT530U4B	HPFG1CC200003D	SAMSUNG ELECTRONICS
AC/DC ADAPTOR	ADP-60ZH	-	-
Network Adapter	RN-9685	-	CREVIS
Digital Input	RT-2328	-	CREVIS
Analog Input	RT-3424	-	CREVIS
SMPS	-	-	-
PLC	X20CP1483	-	-
DC Power Supply 1	E3645A	MY40005533	Agilent
DC Power Supply 2	E3632A	MY40000004	Agilent

Cable Description

No.	From		To		Type of Cable		
	Device	I/O Port	Device	I/O Port	Length (m)	Shielded or Unshielded	Ferrite Core [Y/N]
1	EUT(RN-9685)	System Power	DC Power Supply1	DC OUT	2.0	U	N
2		Ethernet Port1(RJ-45)	Network Adapter	Ethernet Port2(RJ-45)	10.0	S	N
3		Ethernet Port2(RJ-45)	PLC	Ethernet Port1(RJ-45)	10.0	S	N
4		Field Power	DC Power Supply2	DC OUT	2.0	U	N
5	EUT(RT-1218)	IN PUT	EUT(RT-2328)	OUT PUT	3.0	U	N
6	EUT(RT-1228)	IN PUT	EUT(RT-2318)	OUT PUT	3.0	U	N
7	EUT(RT-1238)	IN PUT	Digital Input	OUT PUT	3.0	U	N
8	EUT(RT-3114)	IN PUT	EUT(RT-4114)	OUT PUT	3.0	S	N
9	EUT(RT-7511)	Field Power	DC Power Supply2	DC OUT	2.0	U	N
10		System Power	DC Power Supply1	DC OUT	2.0	U	N
11	EUT(RT-3424)	IN PUT	EUT(RT-4424)	OUT PUT	3.0	S	N
12	Analog Input	IN PUT	EUT(RT-4524)	OUT PUT	3.0	S	N
13	EUT(RT-7408)	PG Line	GND	-	-	-	-
14		Shield	EUT(RT-3118)	GND	3.0	S	N
15		IN PUT	EUT(RT-4118)	OUT PUT	3.0	S	N
16	EUT(RT-7111)	Field Power	DC Power Supply2	DC OUT	2.0	U	N
17		System Power	DC Power Supply1	DC OUT	2.0	U	N
18	EUT(RT-7008)	PG Line	GND	-	-	-	N
19		Shield	EUT(RT-3428)	GND	3.0	S	N
20		IN PUT	EUT(RT-4428)	OUT PUT	3.0	S	N
21	DC Power Supply1	AC POWER	AC Mains	-	2.0	U	N
22	DC Power Supply2	AC POWER	AC Mains	-	2.0	U	N
23	EUT(RN-9685)	System Power	SMPS	DC OUT	1.0	U	N
24	PLC	Ethernet Port1(RJ-45)	Notebook Computer	LAN	10.0	S	N
25		DC IN	SMPS	DC OUT	1.0	U	N
26	SMPS	AC POWER	AC Mains	-	2.0	U	N
27	Notebook Computer	DC IN	AC/DC ADAPTOR	DC OUT	1.0	U	N
28	AC/DC ADAPTOR	AC POWER	AC Mains	-	2.0	U	N
29	Aluminum Plate FG Line	-	GND	-	2.0	S	N

\* Shielded or Unshielded : Unshielded=U, Shielded=S



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### 1.4 Test Software

- EMC Test V 1.0
- Display Test Patterns – V1.5
- Ping.exe
- Not applicable

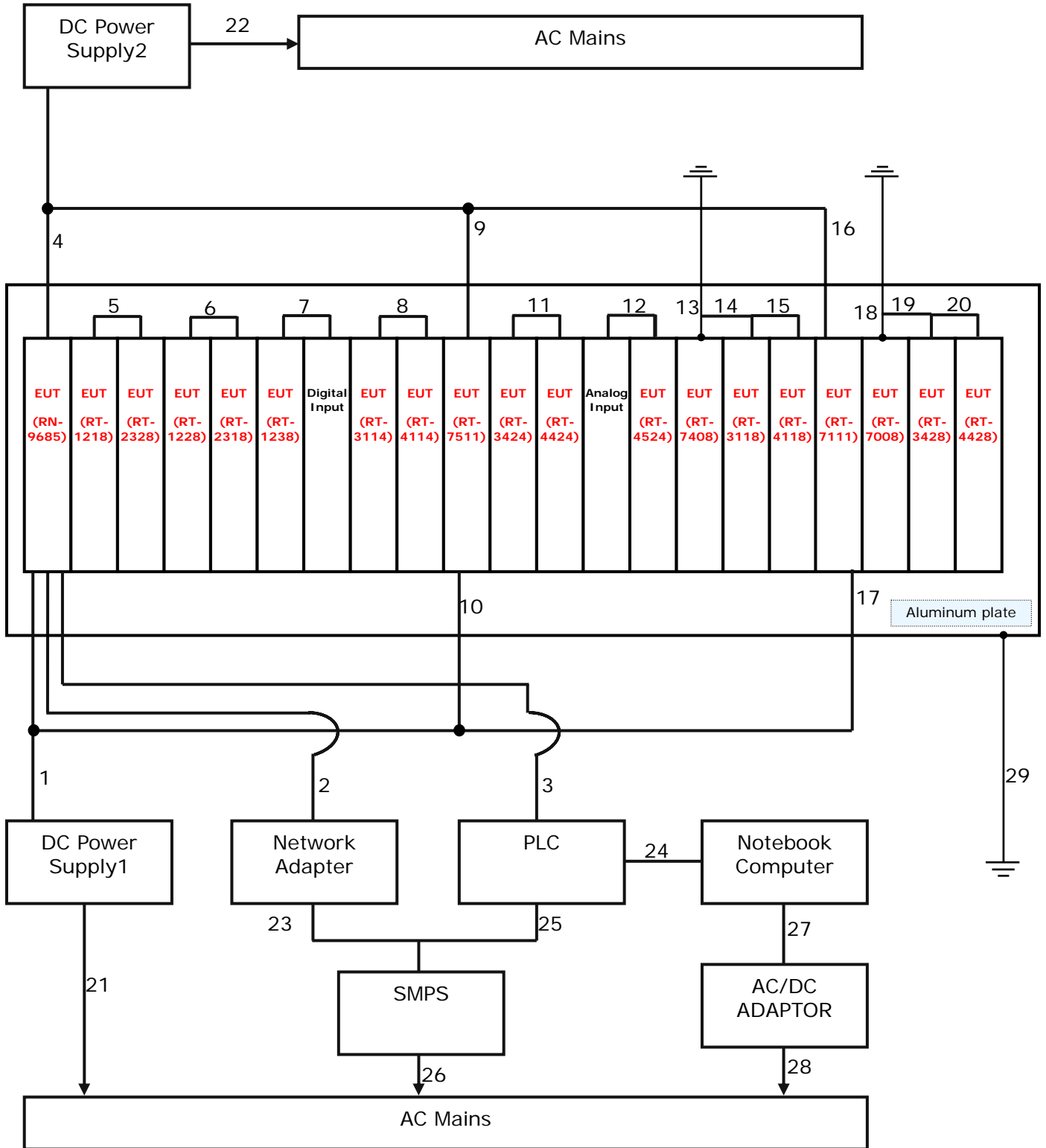
### 1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

- Practice operation - Data Communication Mode



## 1.6 Configuration





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### 1.7 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

### 1.8 Test Facility

The measurement facility is located at 386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### 1.9 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested. Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)

Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed Semi-Anechoic Chamber or anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Semi-Anechoic Chamber. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

\* Measurement procedures was In accordance with ANSI C63.4-2009 7.3.3, 7.3.4, 8.3.1.1, 8.3.1.2, 8.3.2.1, 8.3.2.2



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### 1.10 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Registration Number	Logo
USA	FCC	FCC Part 15 & 18 EMI (Electromagnetic Interference / Emission)	805871	
JAPAN	VCCI	VCCI V-3 EMI (Electromagnetic Interference / Emission)	C-986 T-1843 R-3627 G-387	
KOREA	MSIP	EMI (Electromagnetic Interference / Emission) EMS (Electromagnetic Susceptibility / Immunity)	KR0025	

### 1.11 Measurement Uncertainty

Compliance of the product is based on the measured value.

However, the measurement uncertainty is included for information purposes.

The measurement uncertainties given below are based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

Measurement Type	Frequency Range	Expanded Uncertainty
Conducted Emission	150 kHz to 30 MHz	2.66 dB (C.L.: Approx. 95 %, $k=2$ )
Radiated Emission	30 MHz to 1000 MHz	3.66 dB (C.L.: Approx. 95 %, $k=2$ )
Radiated Emission	1 GHz Above	4.16 dB (C.L.: Approx. 95 %, $k=2$ )



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## 2.0 EMC Test Regulations/Standards

The tests were performed according to following regulations:

Applied standard	Title	Applied	Test Result
FCC Part 15 Subpart B <input checked="" type="checkbox"/> Class A <input type="checkbox"/> Class B	Conducted Voltage Emissions	<input type="checkbox"/>	<input type="checkbox"/> MET <input type="checkbox"/> NOT MET
	Radiated Electric Field Emissions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> MET <input type="checkbox"/> NOT MET



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## 3.0 Results of Individual Test

### 3.1 Conducted Voltage Emissions of Mains ports

**Test Date**

Not applicable

**Test Location**

Shielded Room

**Test Equipment**

Name of Equipment	Model No.	Manufacturer	Serial No.	Due Date	Applied
EMI Test Receiver	ESC17	Rohde & Schwarz	100816	2014-12-06	<input type="checkbox"/>
LISN	ENV216	Rohde & Schwarz	101235	2014-08-02	<input type="checkbox"/>
LISN	ENV216	Rohde & Schwarz	101236	2014-08-02	<input type="checkbox"/>
EMI Test Receiver	ESR7	Rohde & Schwarz	101088	2014-08-02	<input type="checkbox"/>
LISN	ENV216	Rohde & Schwarz	101151	2014-11-08	<input type="checkbox"/>
LISN	ESH3-Z5	Rohde & Schwarz	100207	2014-11-08	<input type="checkbox"/>
EMI Test Receiver	ESC13	Rohde & Schwarz	100032	2014-02-04	<input type="checkbox"/>
LISN	ENV216	Rohde & Schwarz	101150	2014-02-04	<input type="checkbox"/>
LISN	3825/2	EMCO	9607-2575	2014-07-12	<input type="checkbox"/>

**Test Software**

ESC17 : EMC32 Ver. 8.50.0

ESR7, ESC13 : EMC32 Ver. 8.53.0

**Frequency Range of Measurement**

150 kHz to 30 MHz

**Instrument Setting**

IF Band Width: 9 kHz

**Climate Condition**

Temperature:

Relative Humidity:

Atmospheric Pressure:

**Test Result**

The requirements are:  MET  NOT MET

Frequency (MHz)	Measured Data (dBµV)	Margin (dB)	Remark

The Result is calculated by using the following formula;

\* Result = Limit – Margin (Result included the correction factor)

\* Correction factor = Cable Loss + Insertion loss of LISN





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### Test Data

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## 3.2 Radiated Electric Field Emissions (Below 1 GHz)

### Test Date

2013-12-27

### Test Location

10 m SAC (test distance :  10 m,  3 m)

### Test Equipment

Name of Equipment	Model No.	Manufacturer	Serial No.	Due Date	Applied
EMI Test Receiver	ESCI7	Rohde & Schwarz	100814	2014-12-06	<input checked="" type="checkbox"/>
Trilog Broadband Antenna	VULB 9161 SE	SCHWARZBECK	9161-4133	2014-06-11	<input checked="" type="checkbox"/>
6dB Attenuator	DNF	Rohde & Schwarz	272.4110.50	2014-11-12	<input checked="" type="checkbox"/>
Amplifier	310	Sonoma Instrument Co.	291721	2014-03-21	<input checked="" type="checkbox"/>

### Test Software

TOYO EMI software Ver. 5.1.0

### Frequency Range of Measurement

30 MHz to 1 GHz

### Instrument Setting

IF Band Width: 120 kHz

### Climate Condition

Temperature: (22 ± 1) °C

Relative Humidity: (45 ± 1) %

Atmospheric Pressure: 100 kPa

### Test Result

The requirements are:  MET  NOT MET

Frequency (MHz)	Measured Data (dBμV/m)	Margin (dB)	Remark
43.823	33.7	5.3	Quasi-peak

The Result is calculated by using the following formula;

\* Result = Reading + Correction factor

\* Correction factor = Antenna Factor + Cable Loss + 6 dB attenuator – Amp Gain



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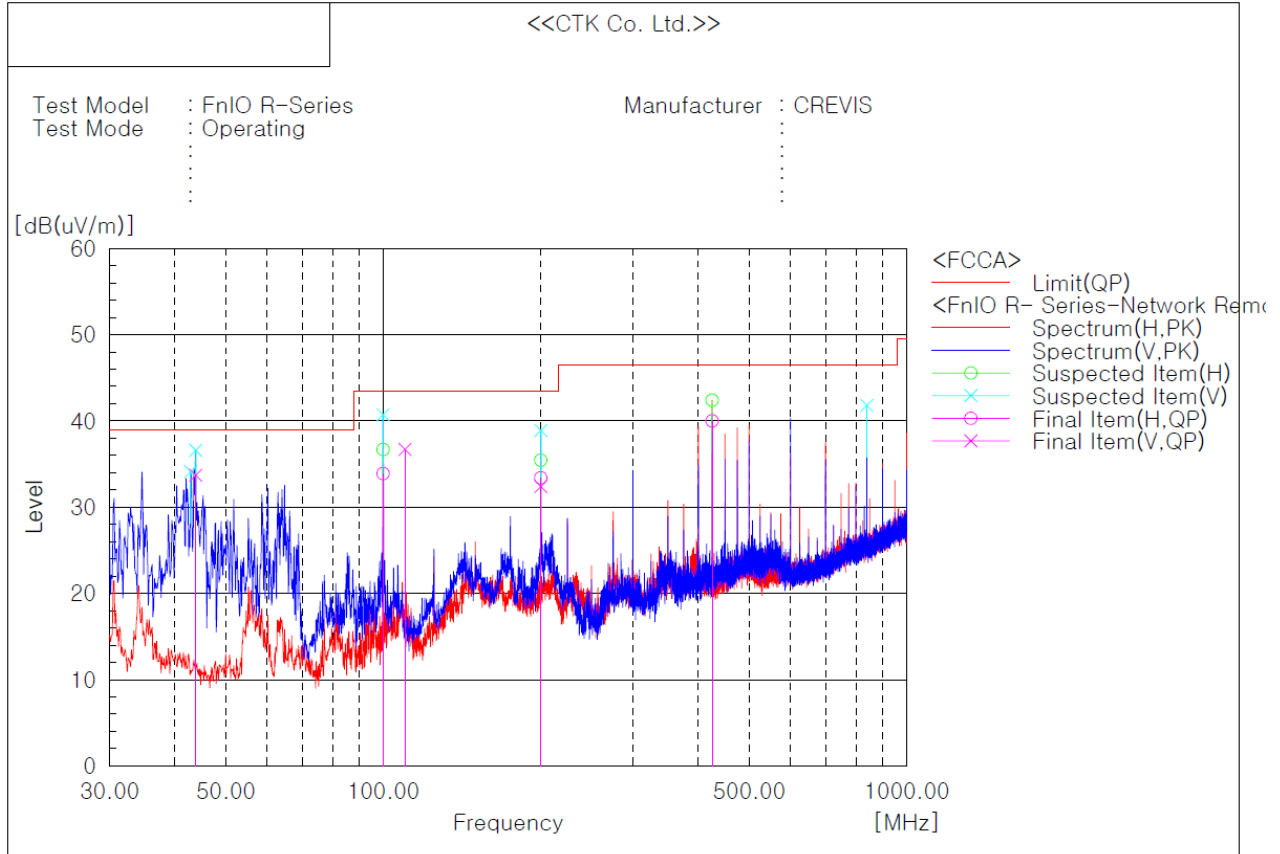
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## Test Data



### Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	43.823	V	47.5	-13.8	33.7	39.0	5.3	208.0	178.0
2	99.961	H	46.8	-12.9	33.9	43.5	9.6	400.0	141.0
3	110.003	V	49.5	-12.8	36.7	43.5	6.8	100.0	270.0
4	199.993	V	43.3	-10.9	32.4	43.5	11.1	100.0	280.0
5	199.993	H	44.3	-10.9	33.4	43.5	10.1	400.0	178.0
6	425.033	H	44.6	-4.6	40.0	46.5	6.5	307.0	294.0



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## 3.3 Radiated Electric Field Emissions (Above 1 GHz)

### Test Date

Not Applicable

### Test Location

3 m SAC

### Test Equipment

Name of Equipment	Model No.	Manufacturer	Serial No.	Due Date	Applied
EMI Test Receiver	ESU40	Rohde & Schwarz	100336	2014-06-27	<input type="checkbox"/>
Double Ridged Guide Antenna	3115	ETS-Lindgren	78895	2015-02-28	<input type="checkbox"/>
Preamplifier	8449B	Agilent Technologies	3008A02307	2014-11-08	<input type="checkbox"/>

### Test Software

TOYO EMI software Ver. 5.1.0

### Frequency Range of Measurement

1 GHz to 6 GHz

### Instrument Setting

IF Band Width: 1 MHz

### Climate Condition

Temperature:

Relative Humidity:

Atmospheric Pressure:

### Test Result

The requirements are:  MET  NOT MET

Frequency (MHz)	Measured Data (dB $\mu$ V/m)	Margin (dB)	Remark

The Result is calculated by using the following formula;

\* Result = Reading + Correction factor

\* Correction factor = Antenna Factor + Cable Loss– Amp Gain



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### Test Data

*Not Applicable*



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# APPENDIX A - Test Setup Photos and Configuration



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### Conducted Voltage Emissions of Mains Ports

*Not Applicable*



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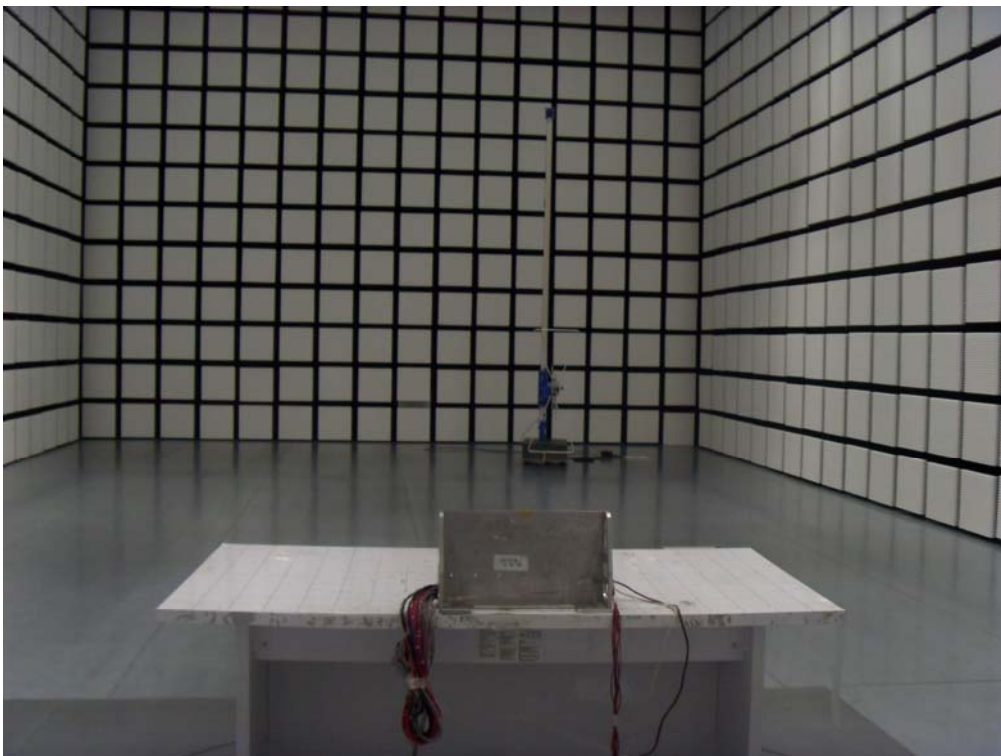
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## Radiated Electric Field Emissions (Below 1 GHz)







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### Radiated Electric Field Emissions (Above 1 GHz)

*Not Applicable*



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## APPENDIX B – EUT Photographs



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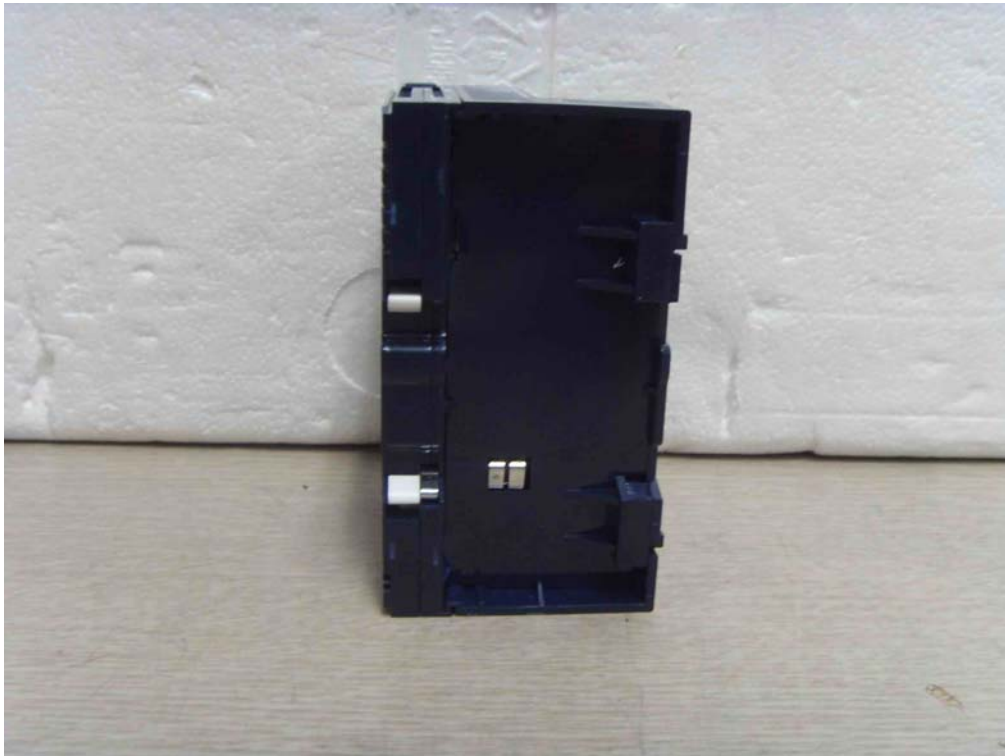
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## EUT External Photographs

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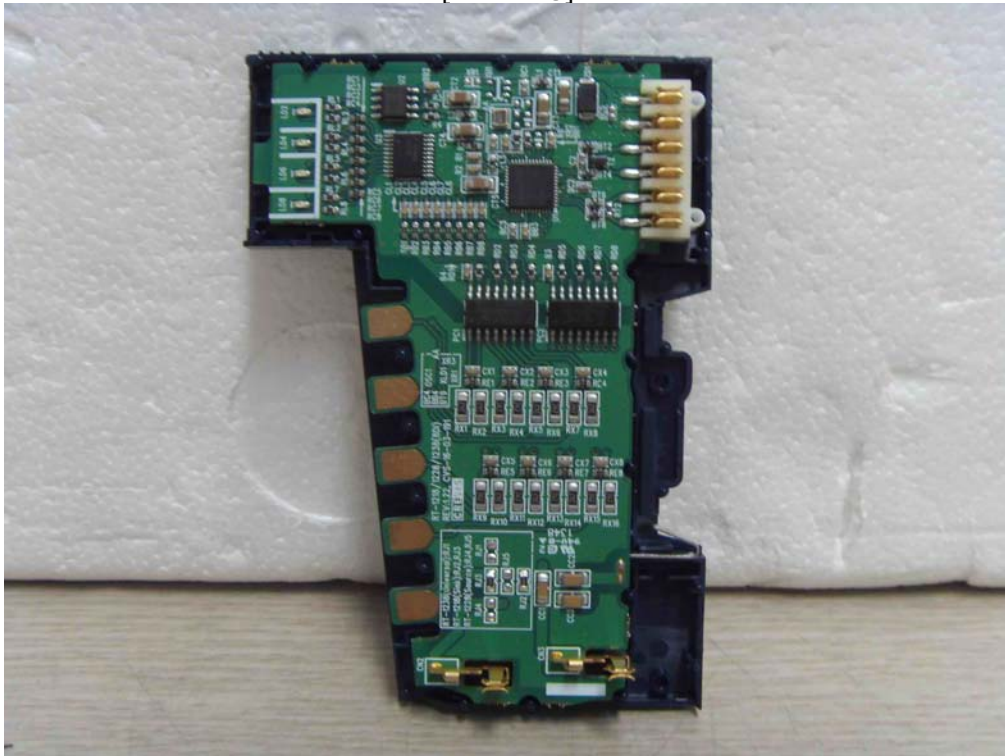
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## EUT Internal Photographs

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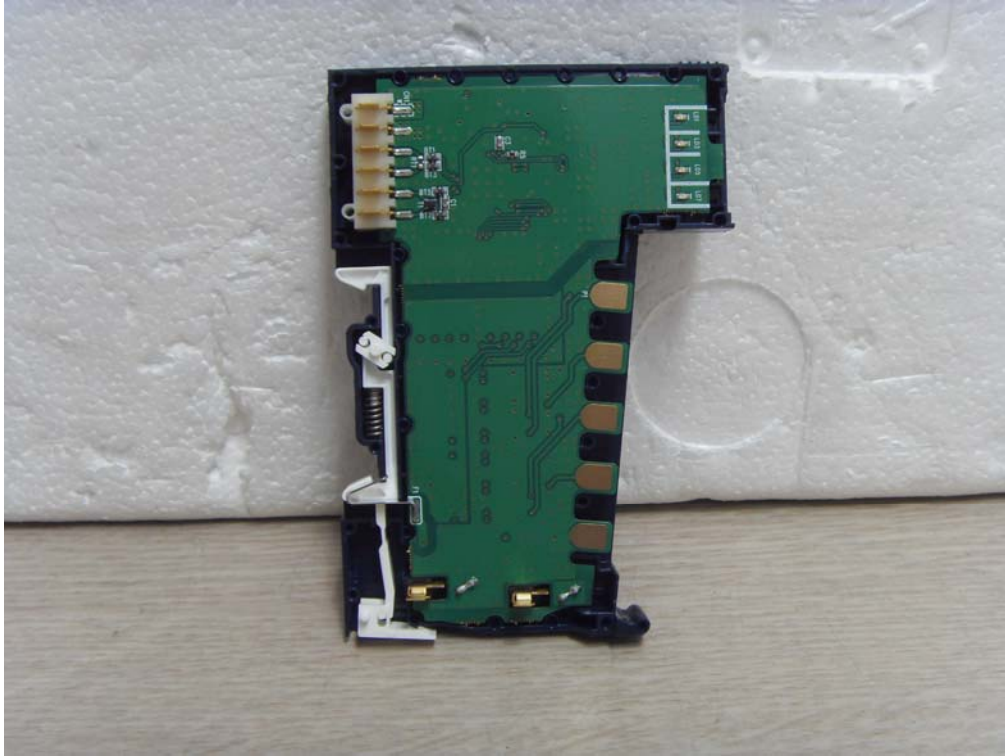
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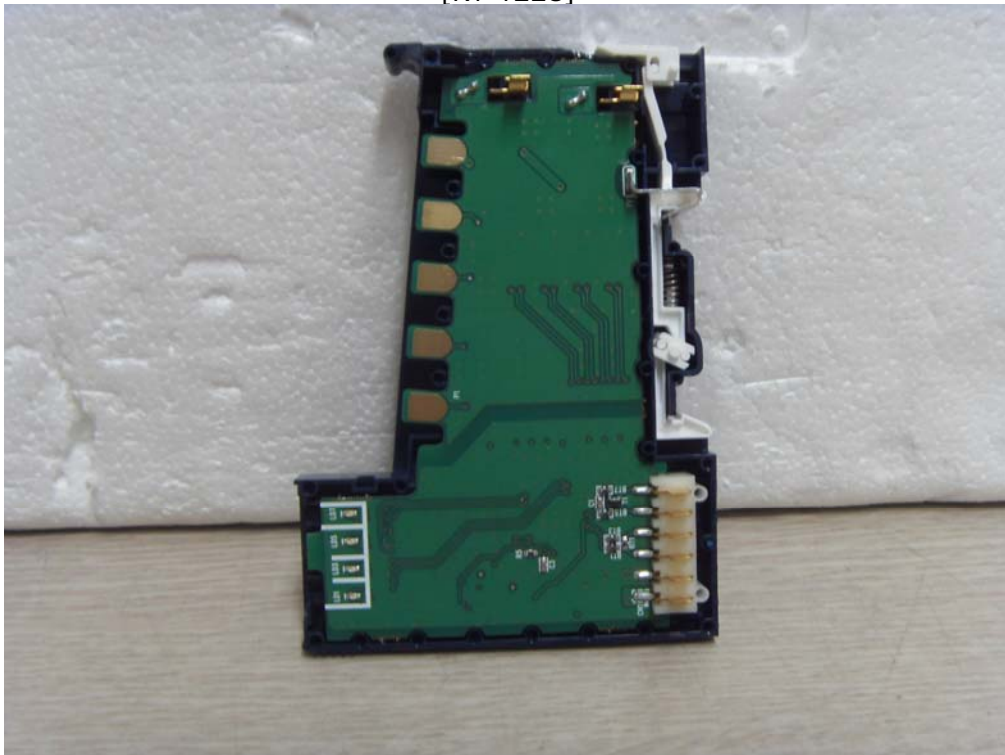
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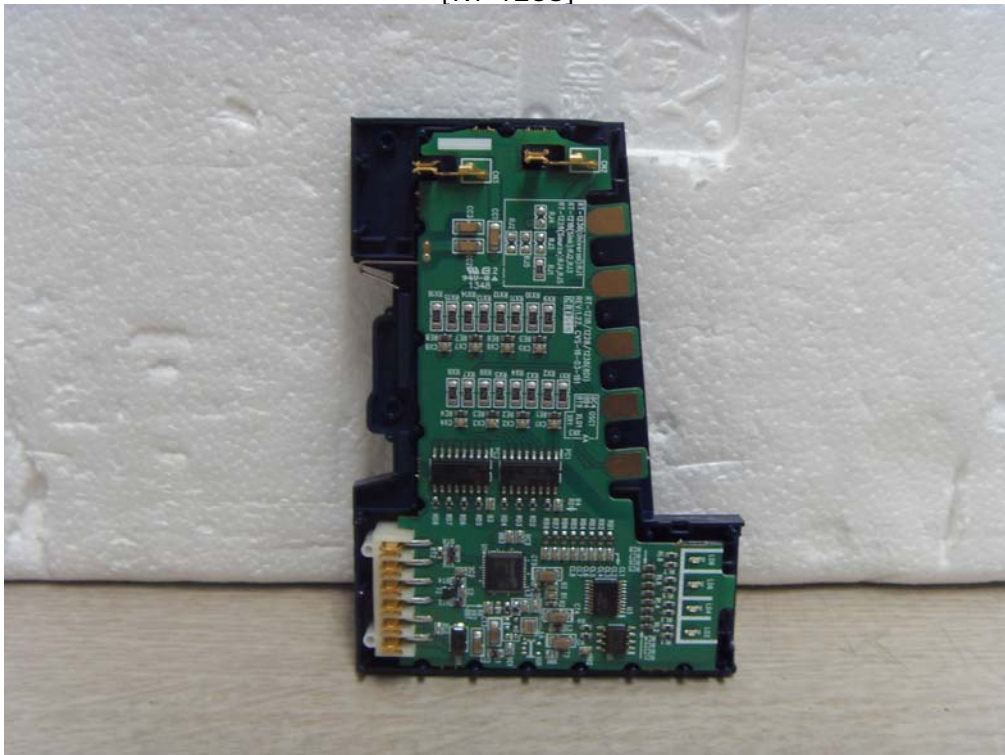
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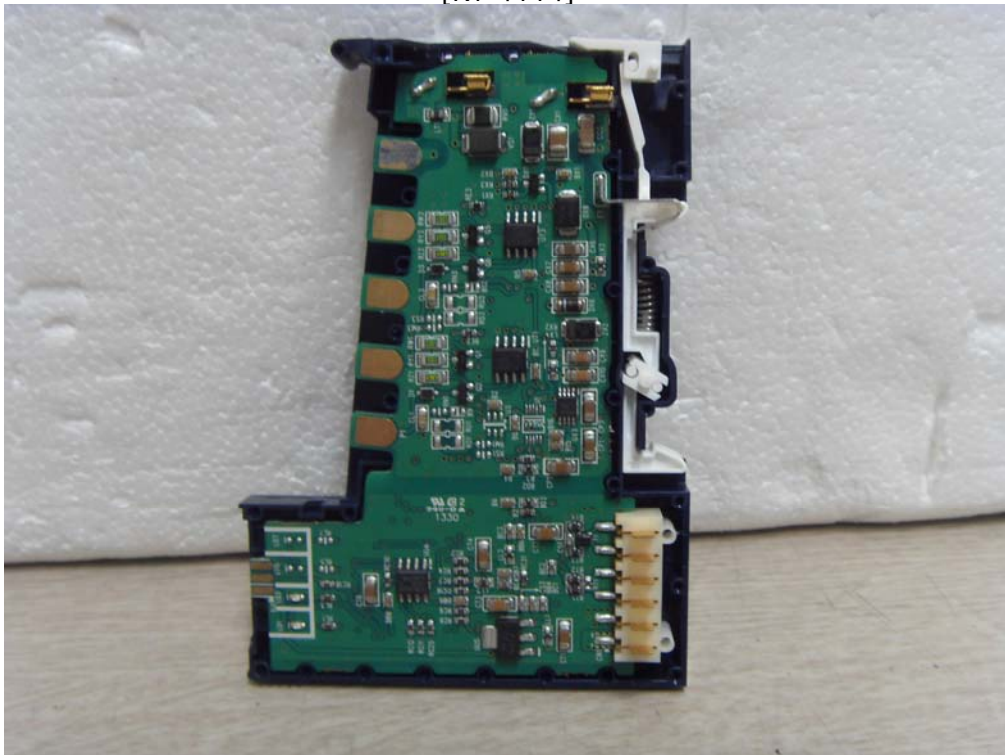
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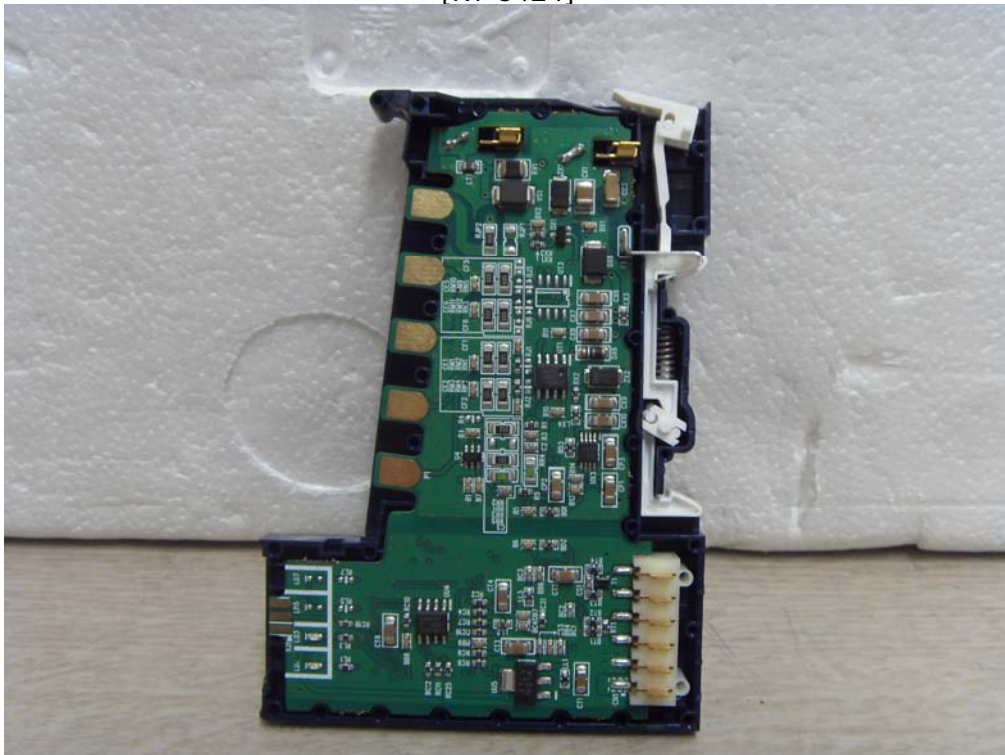
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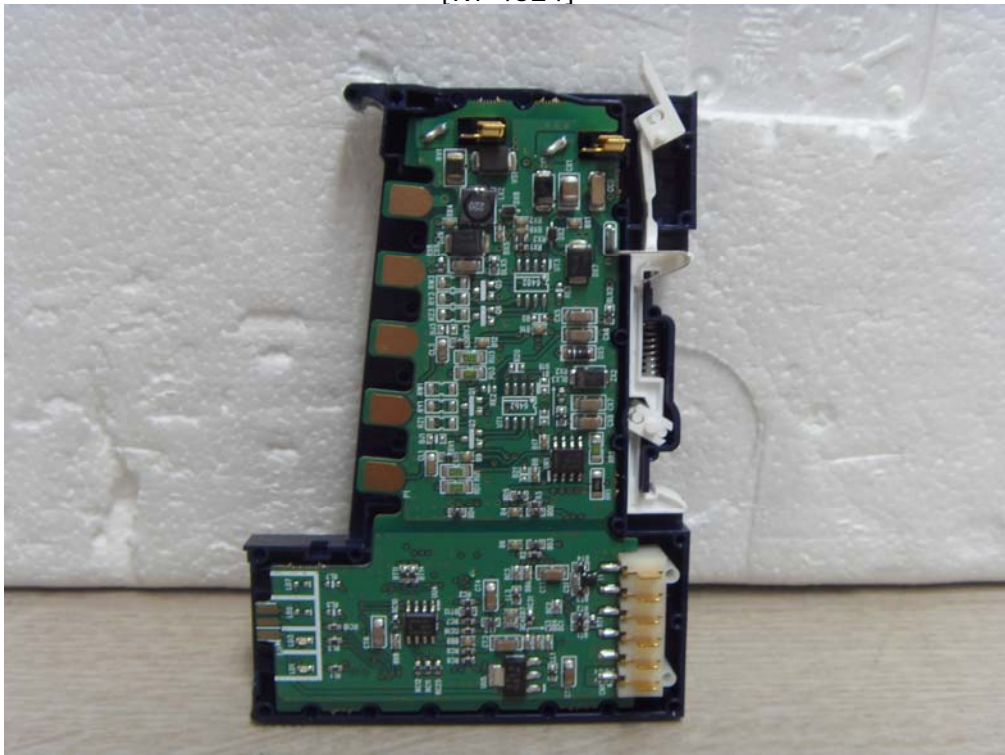
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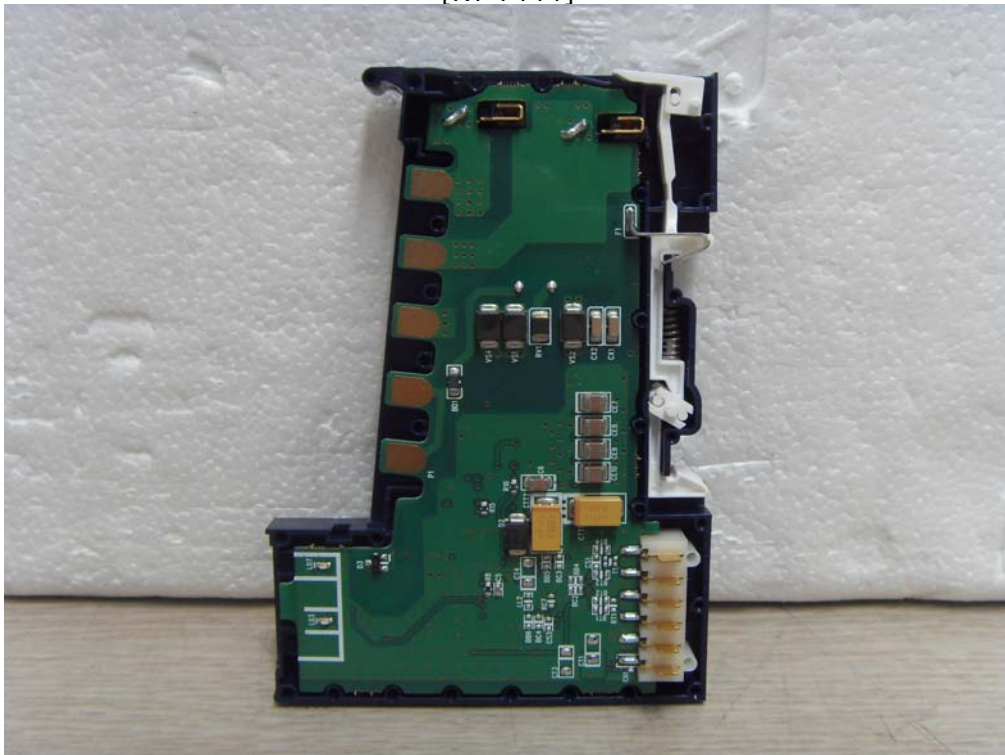
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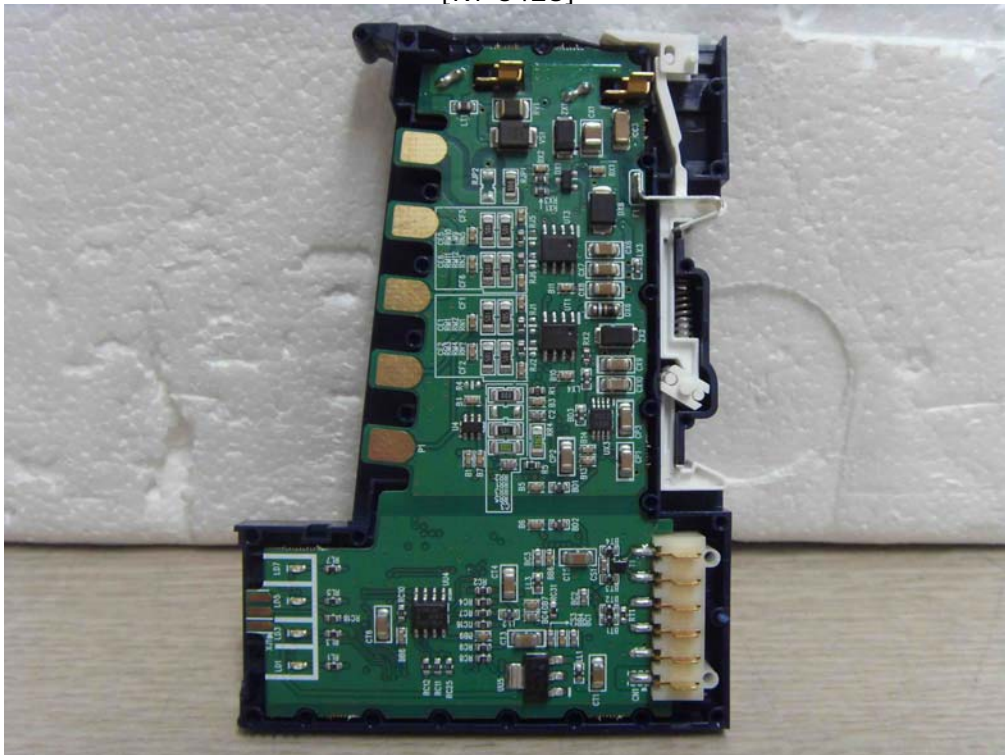
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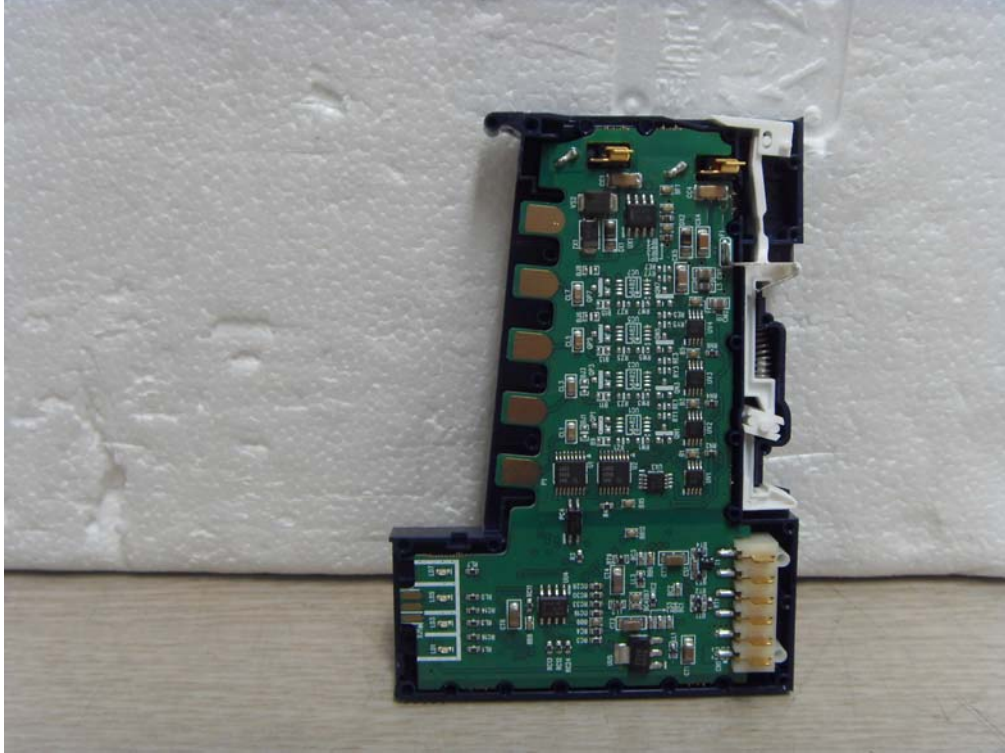
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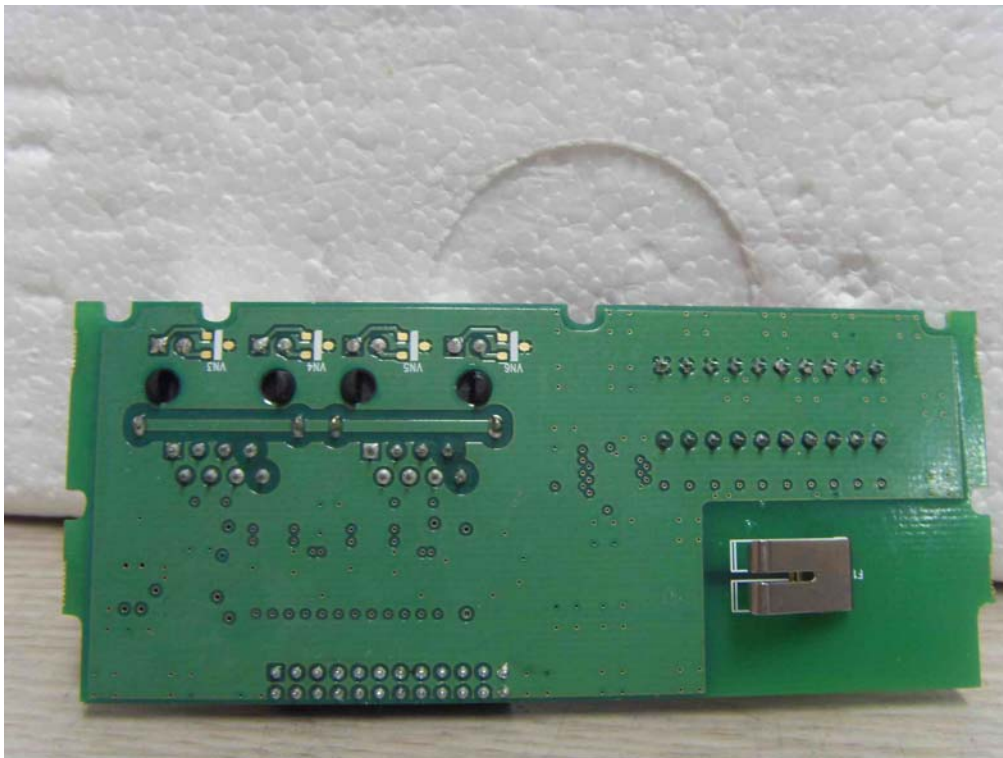
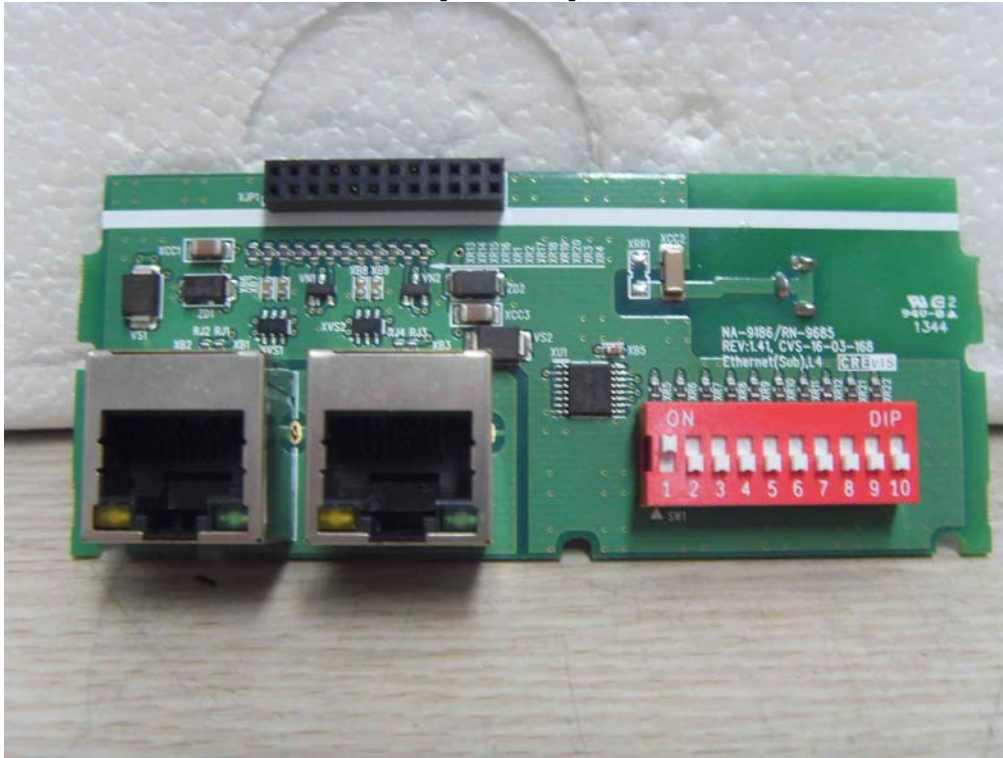
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## PCB

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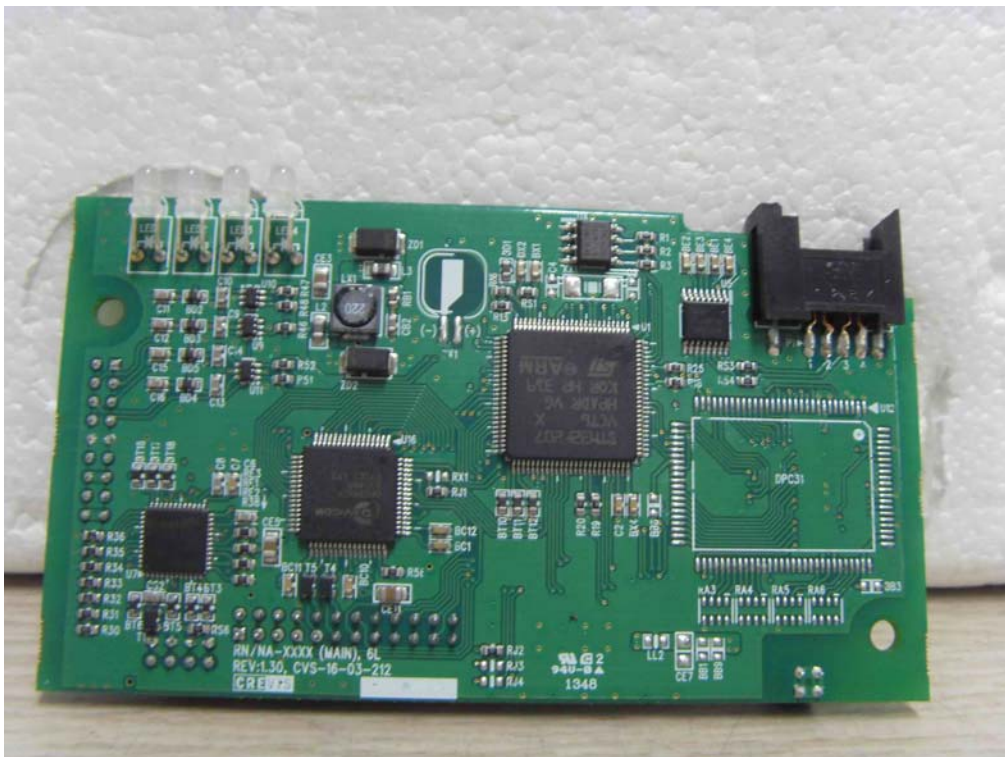
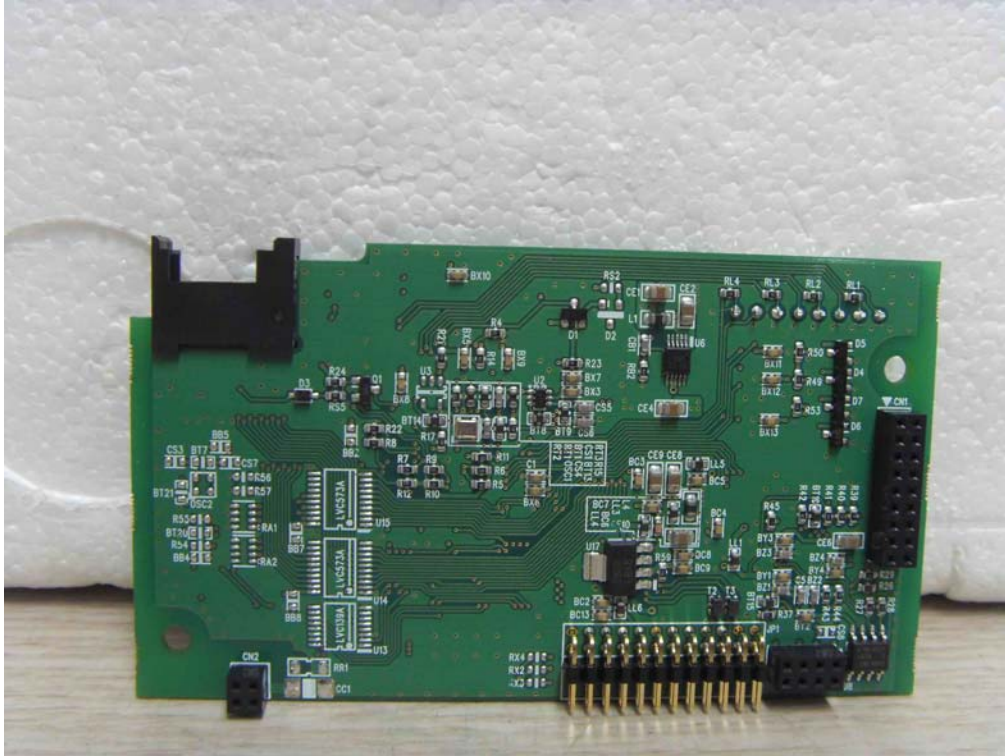
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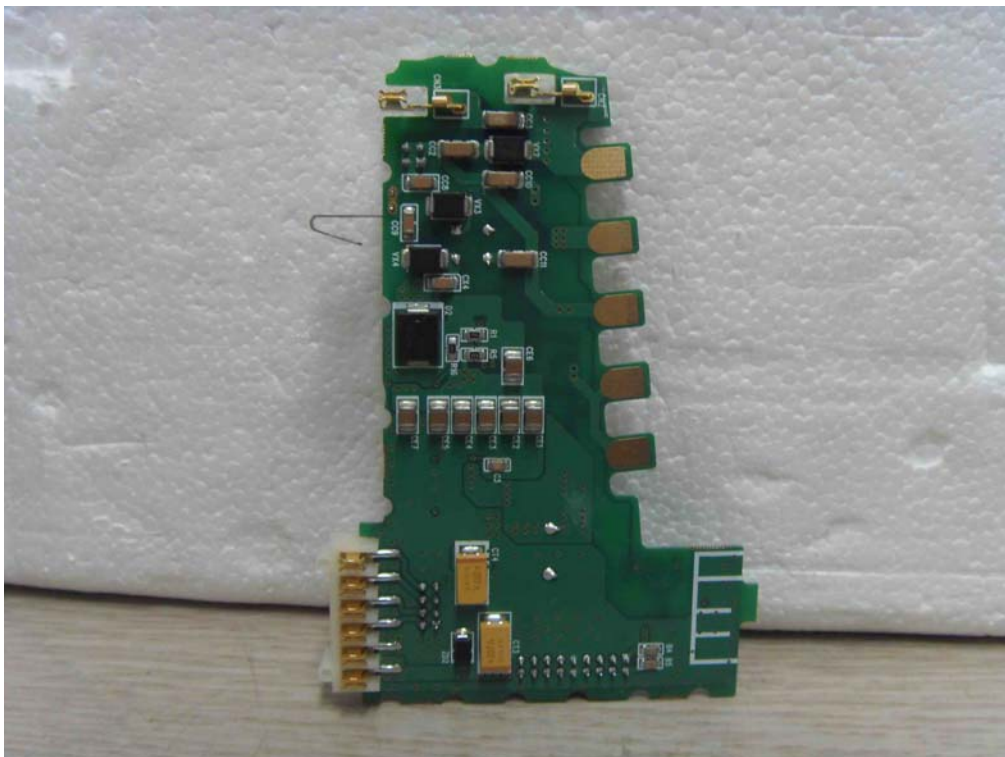
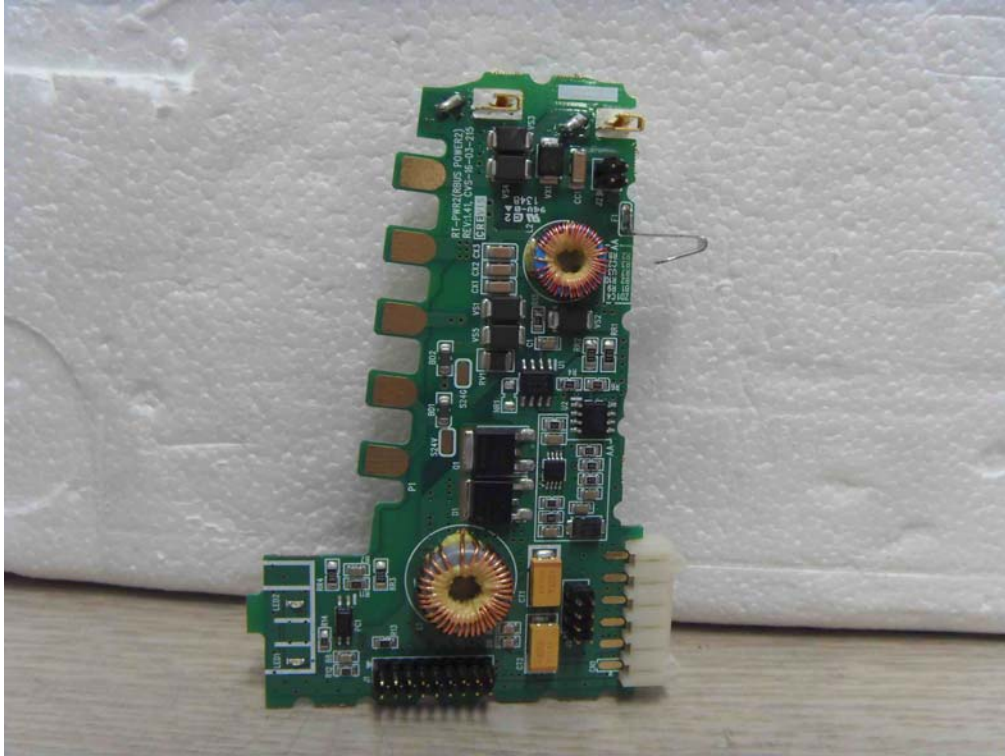
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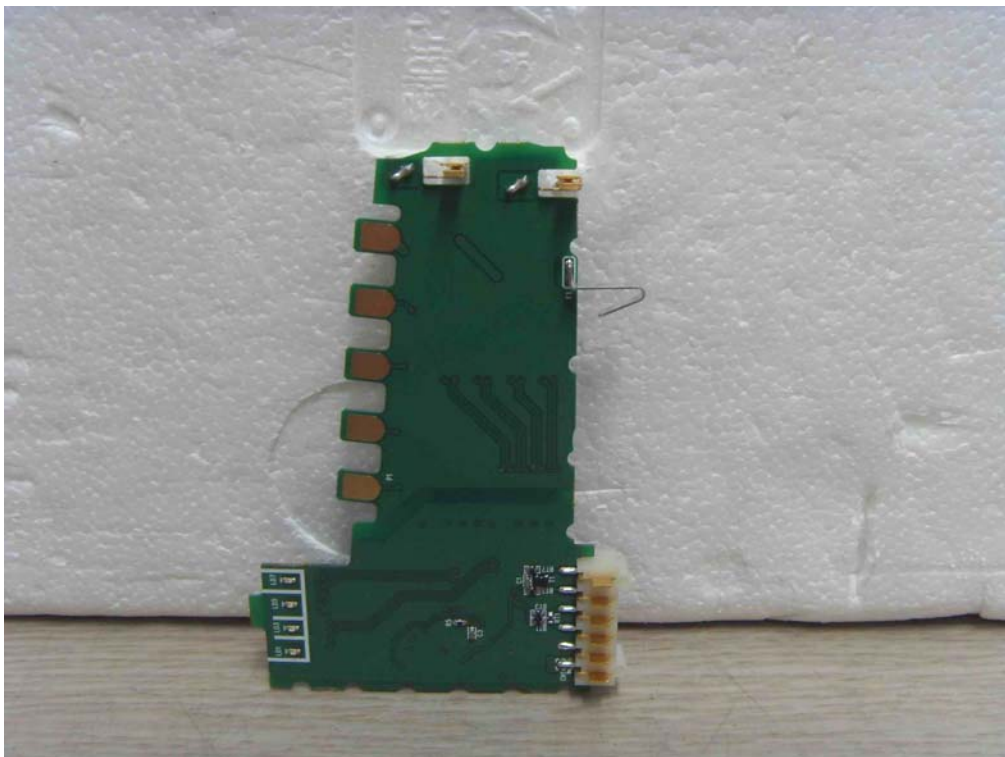
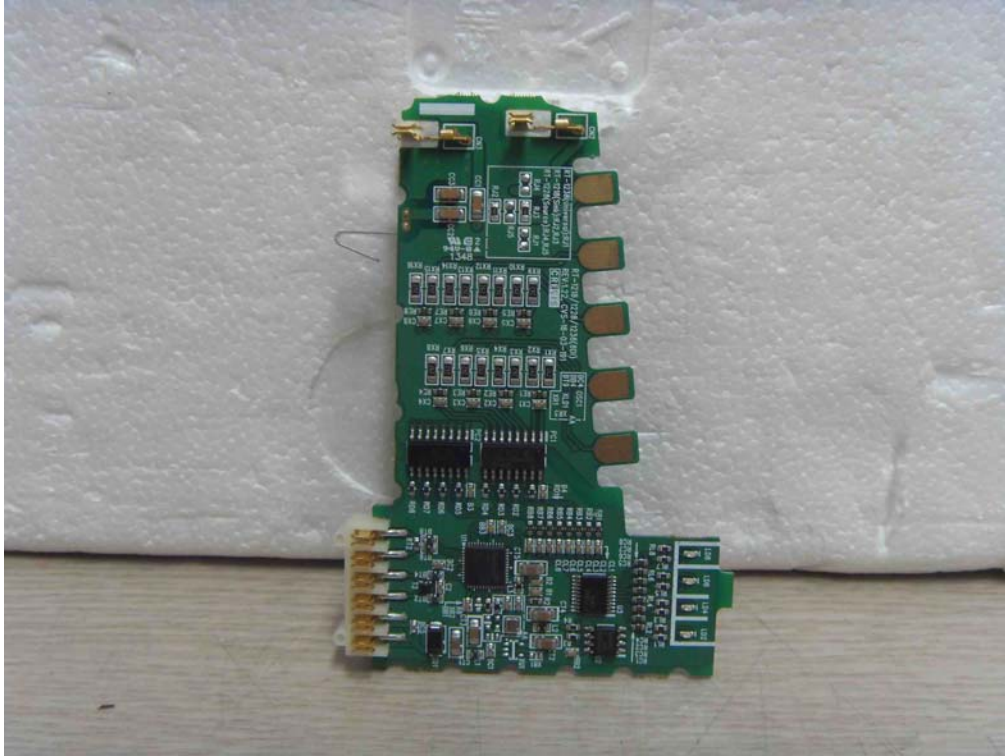
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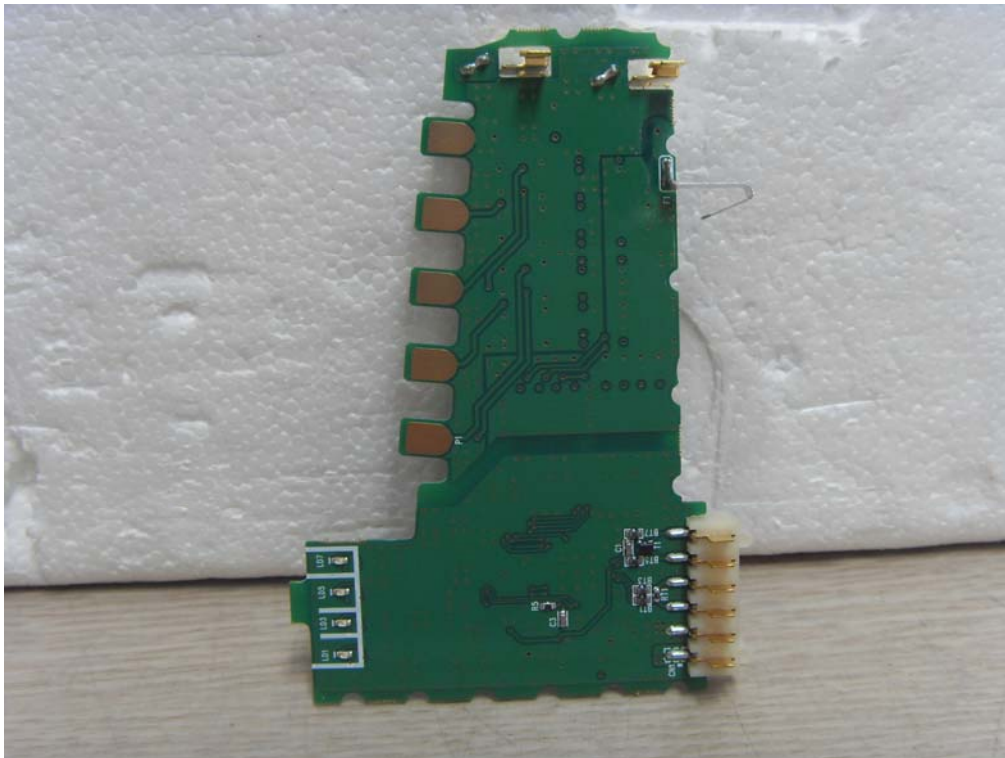
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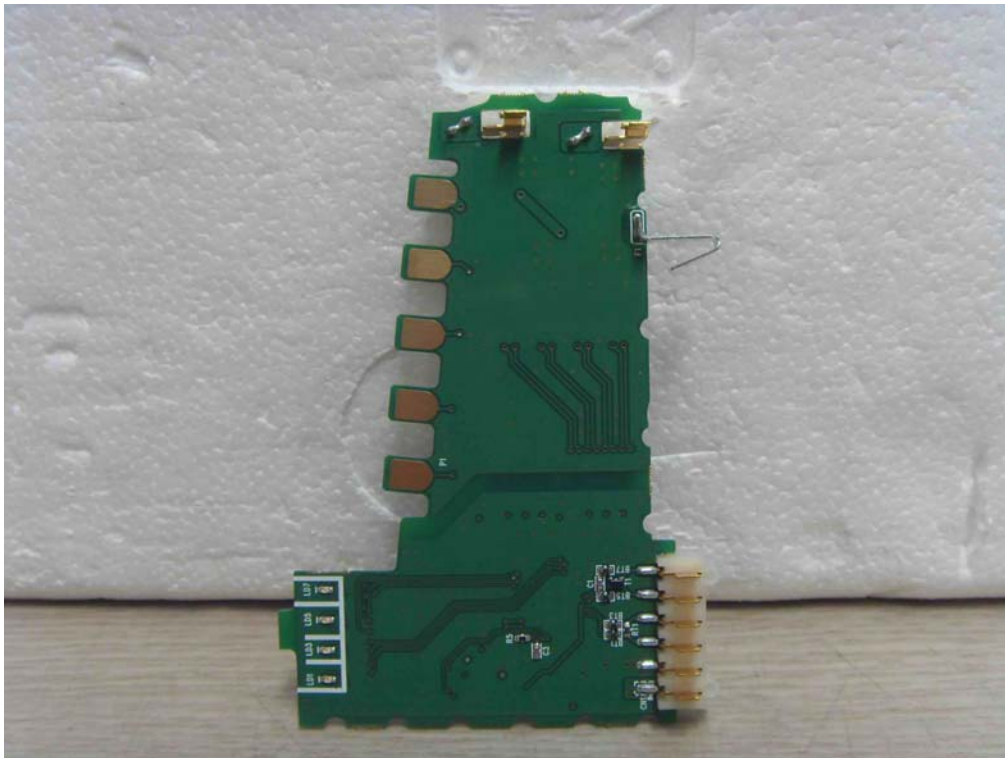
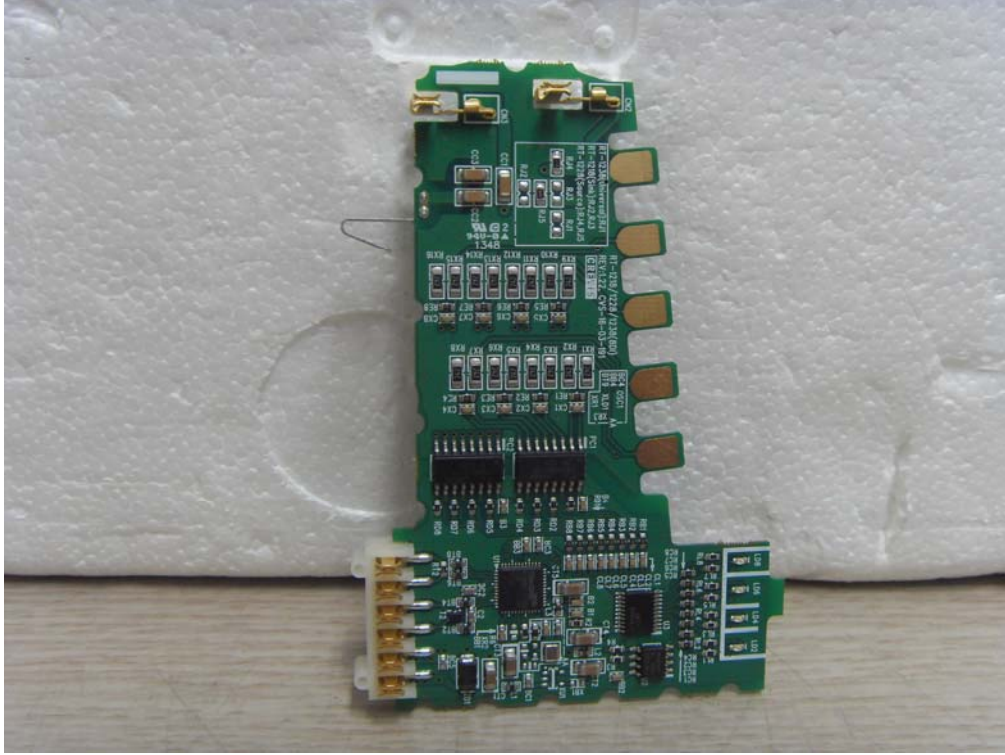
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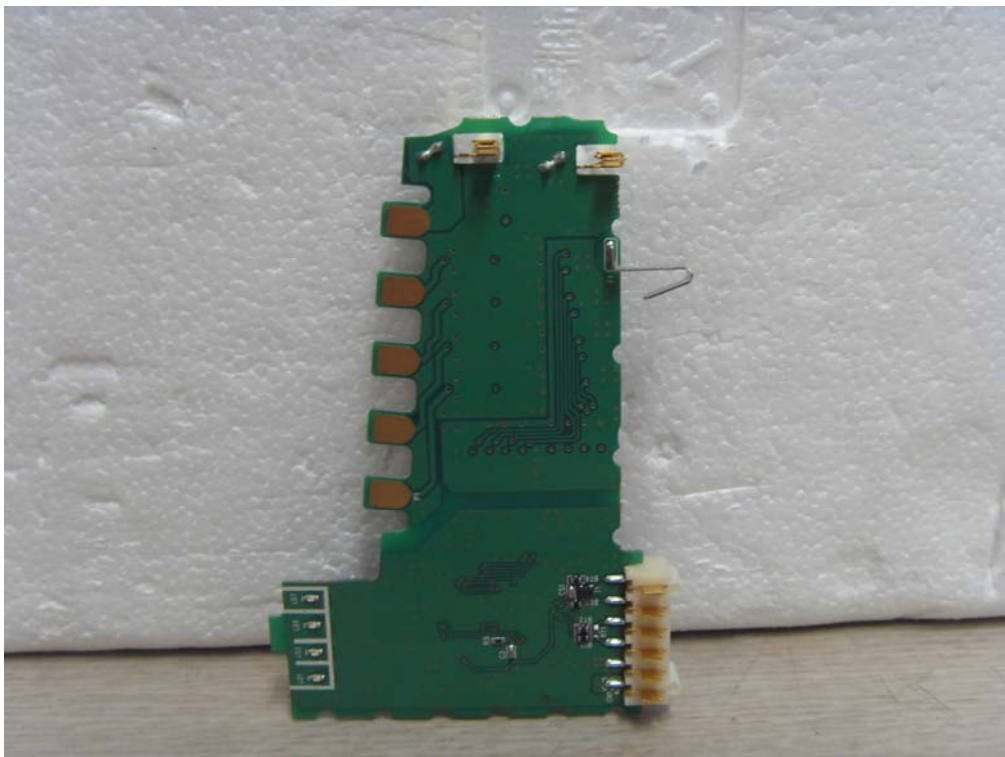
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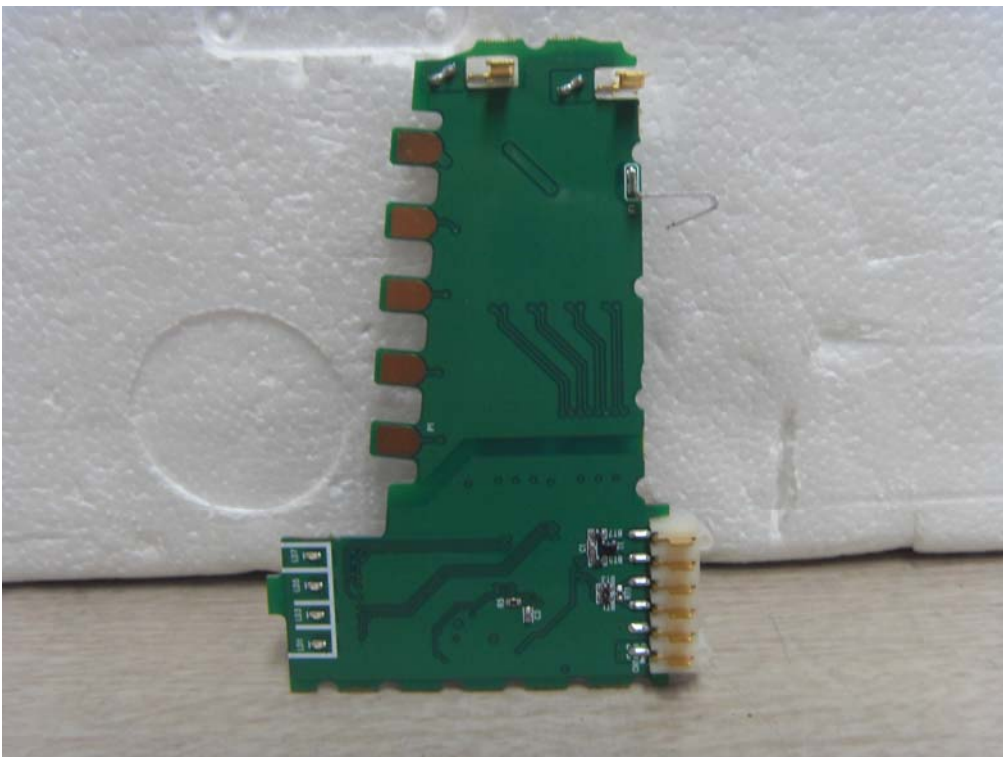
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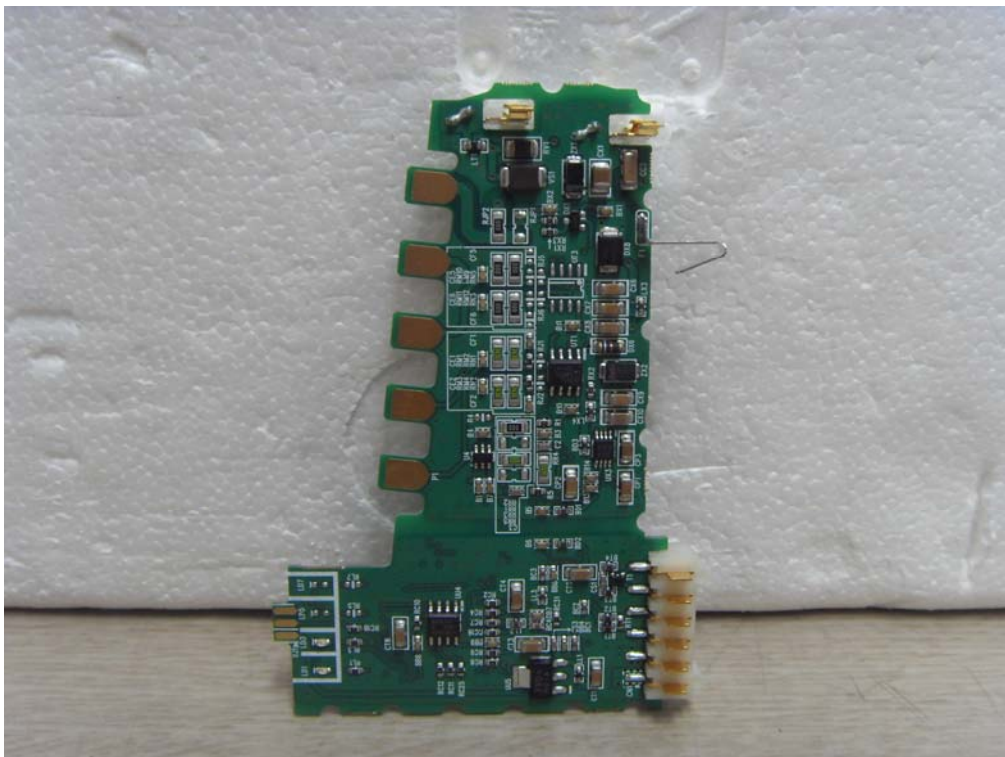
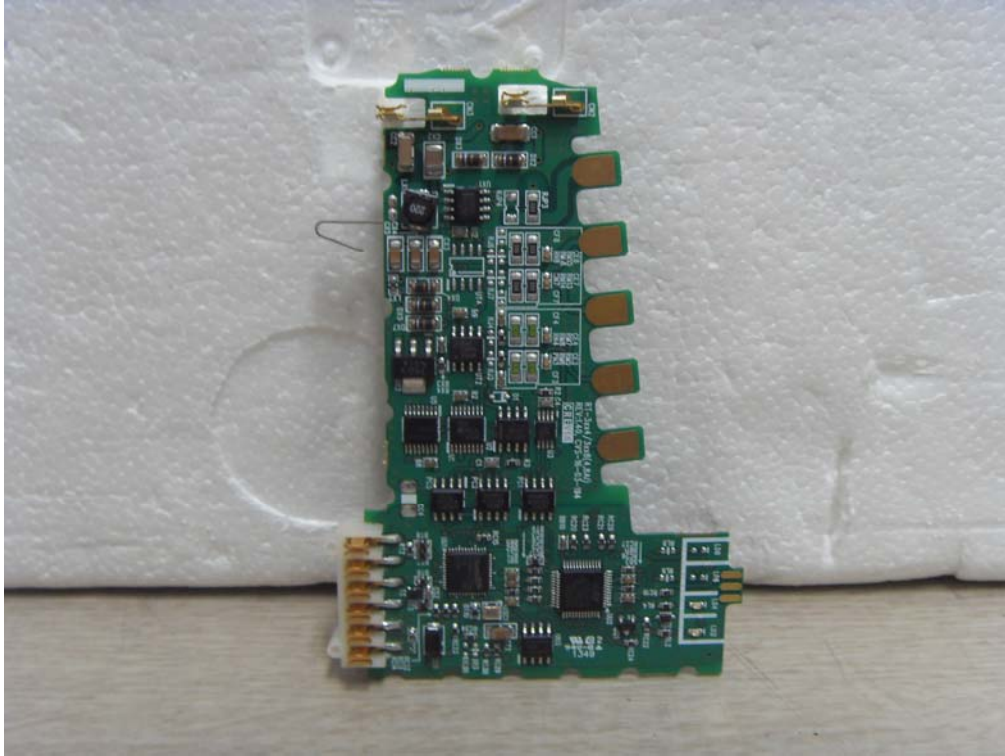
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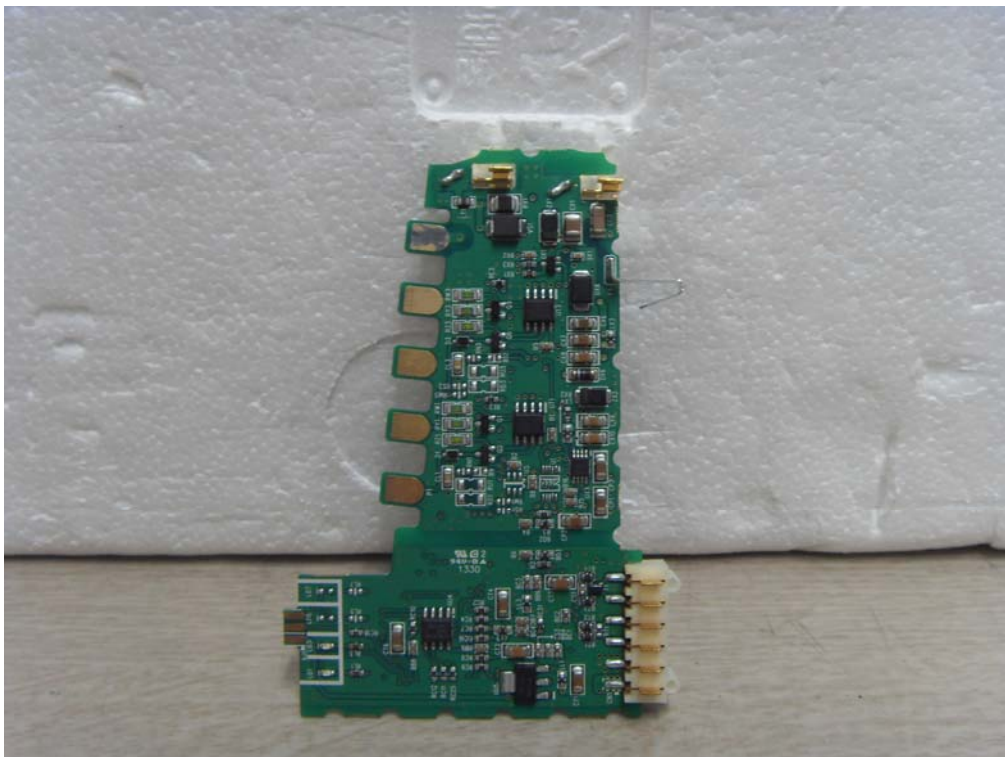
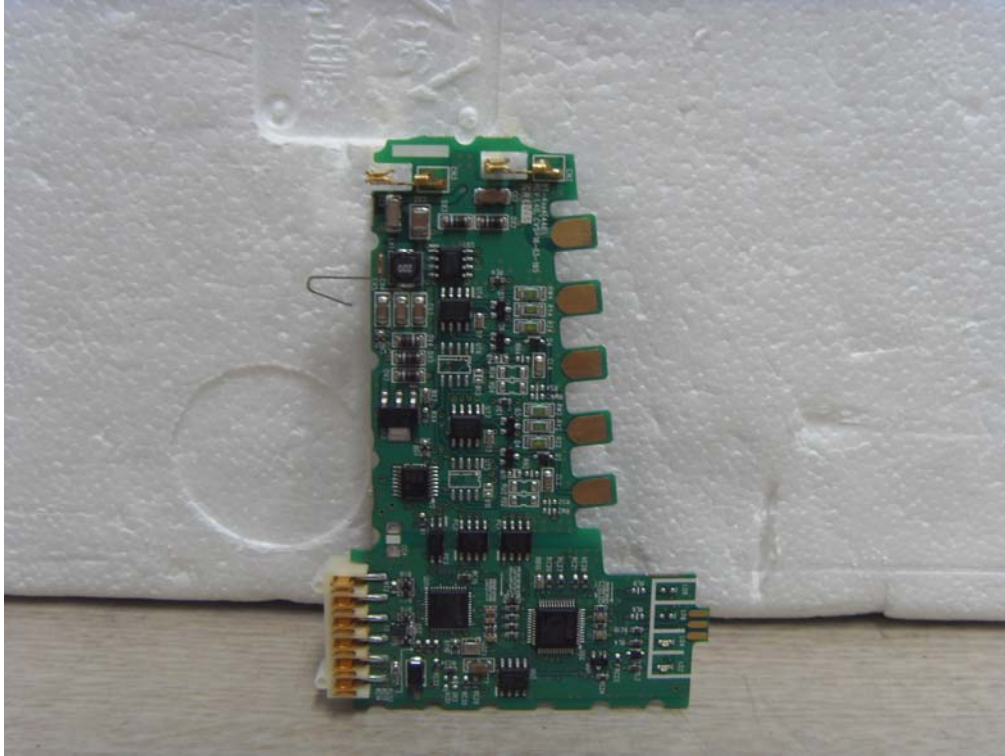
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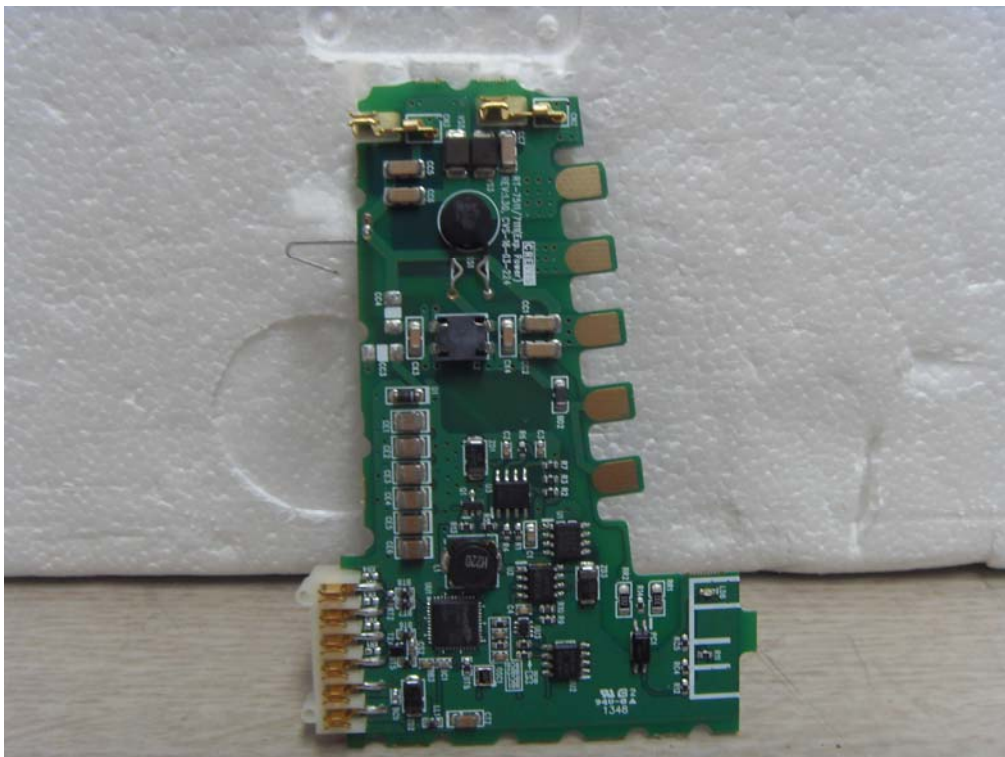
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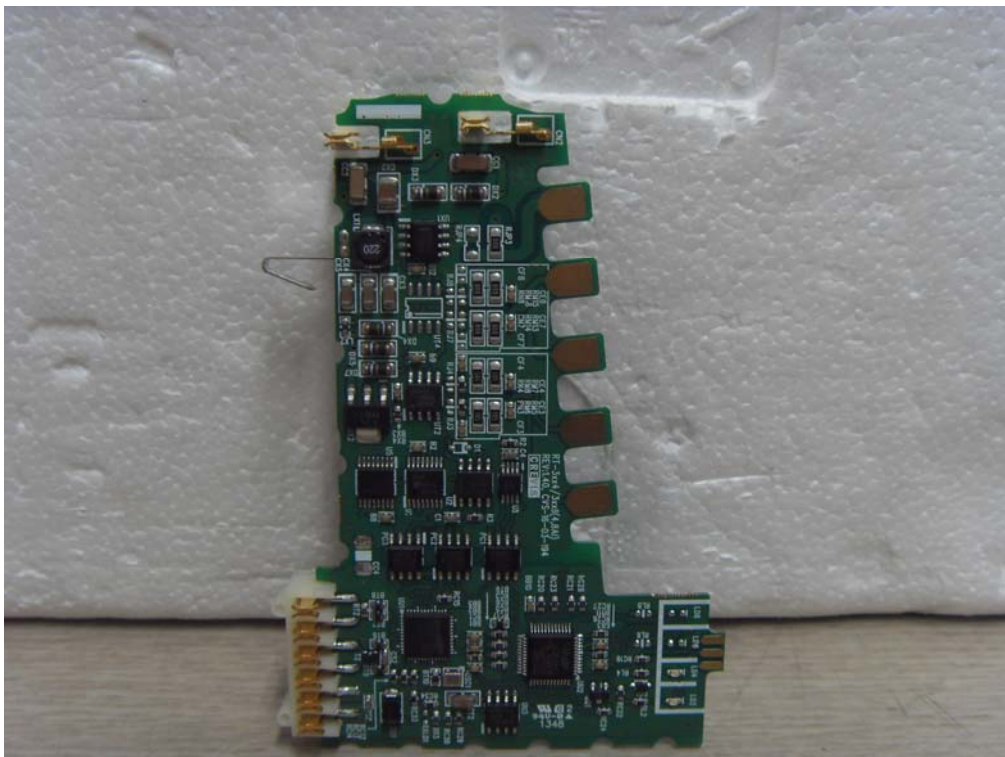
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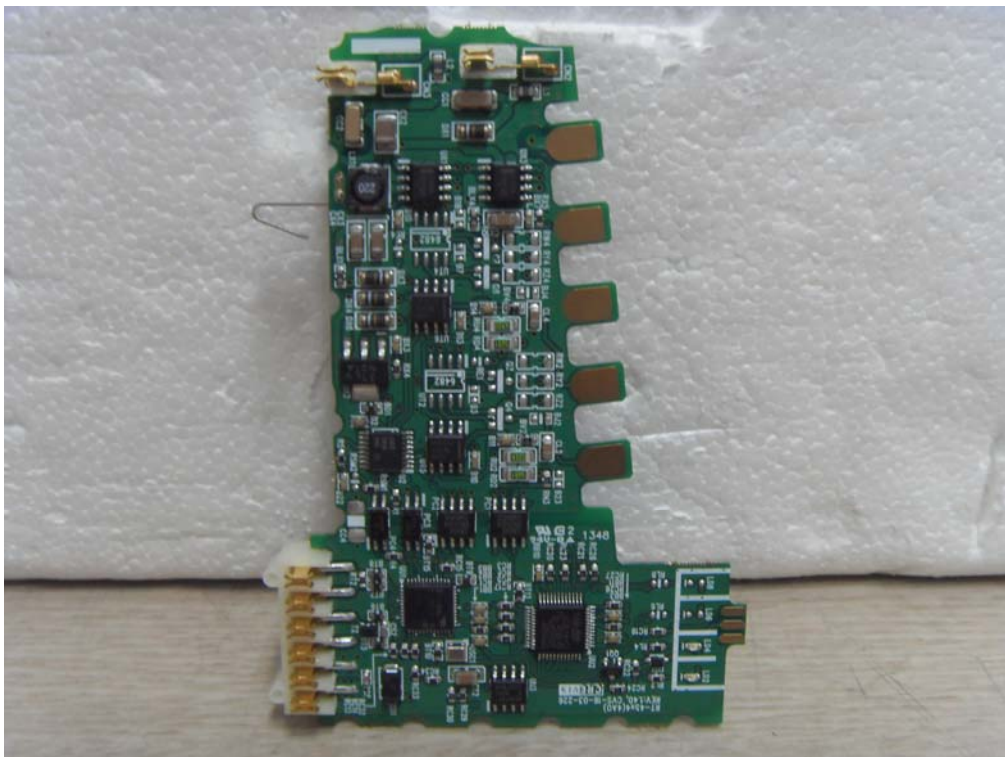
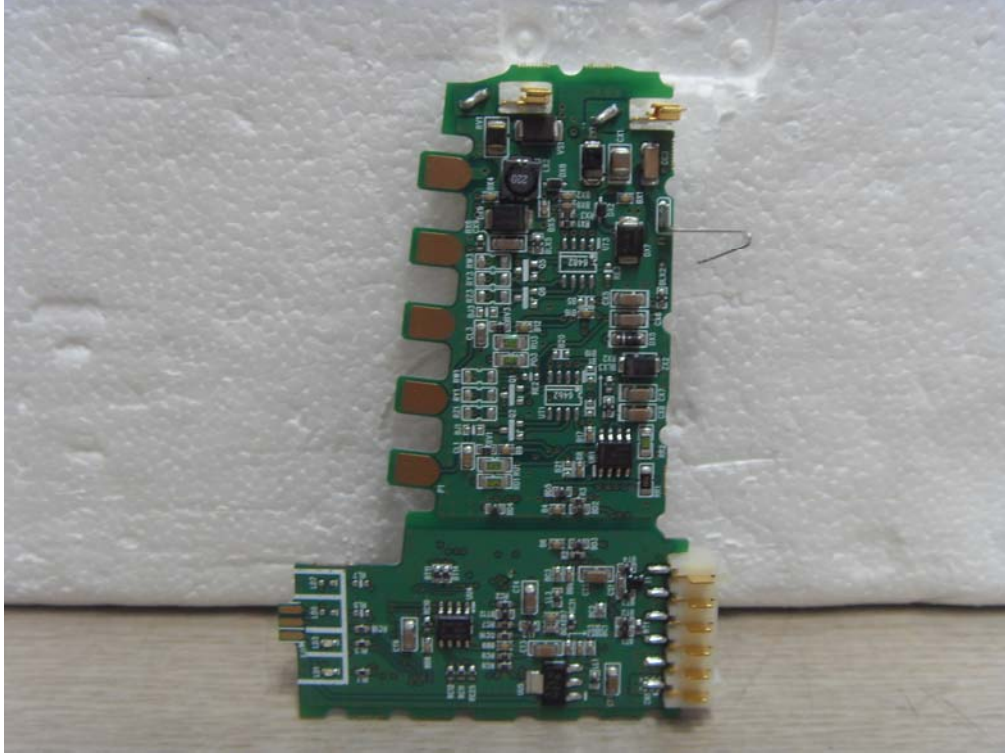
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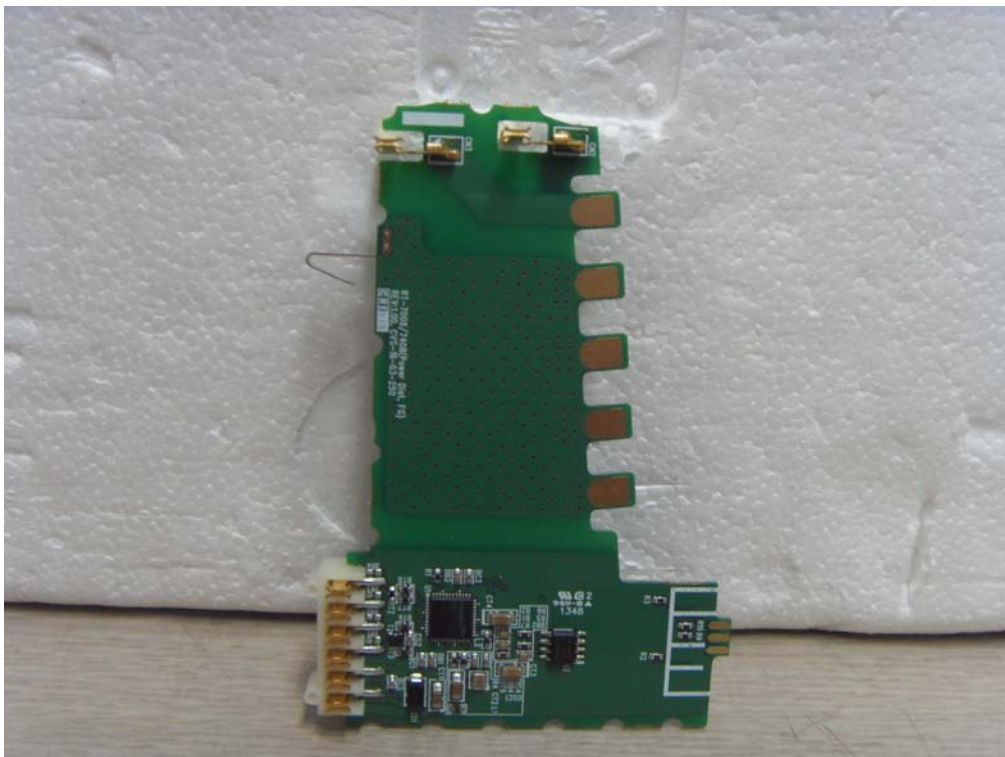
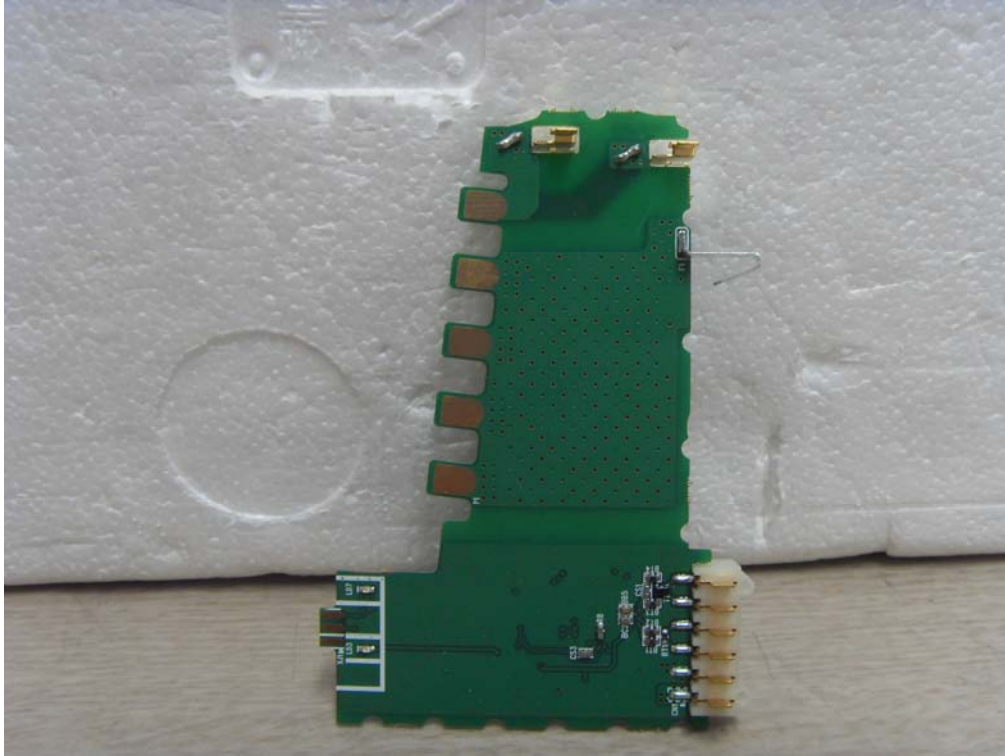
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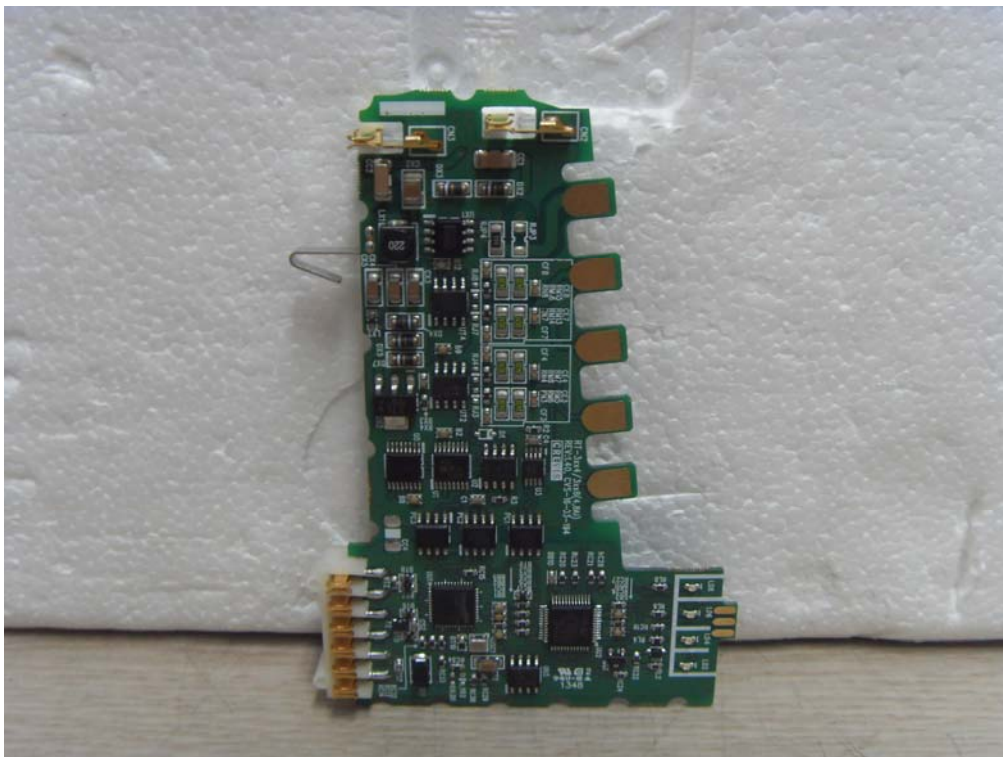
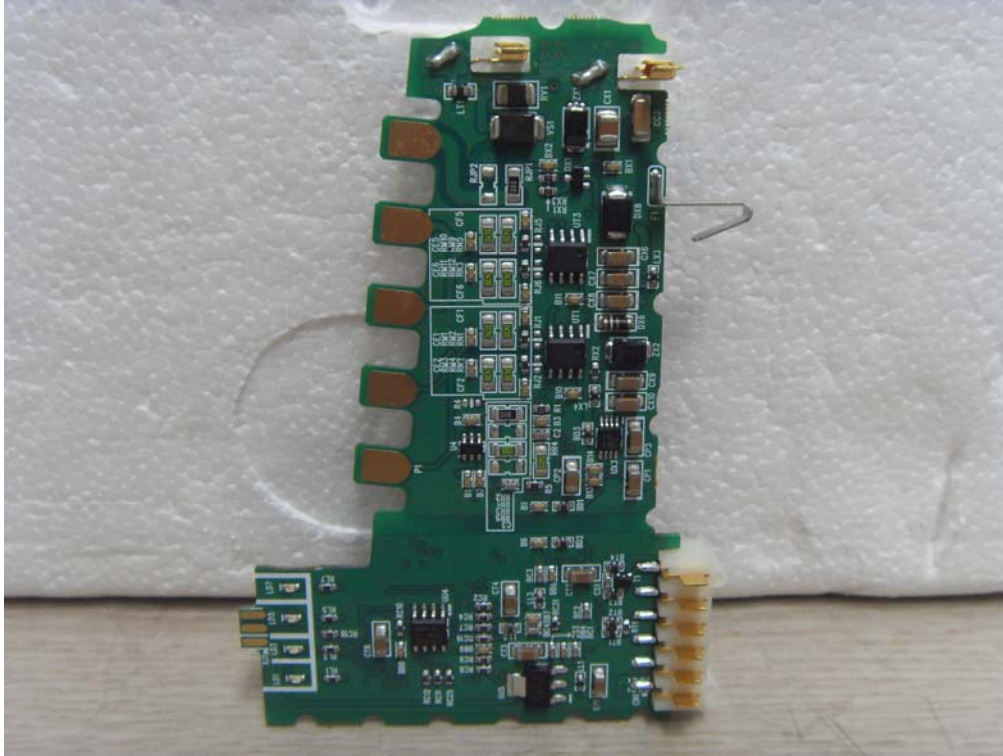
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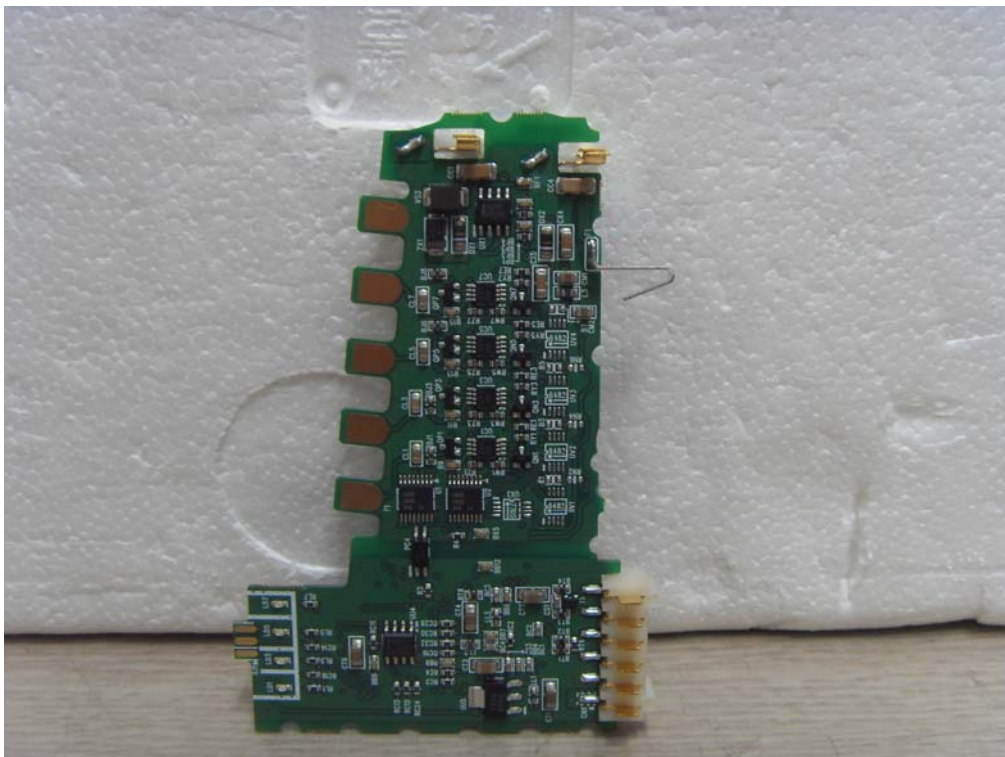
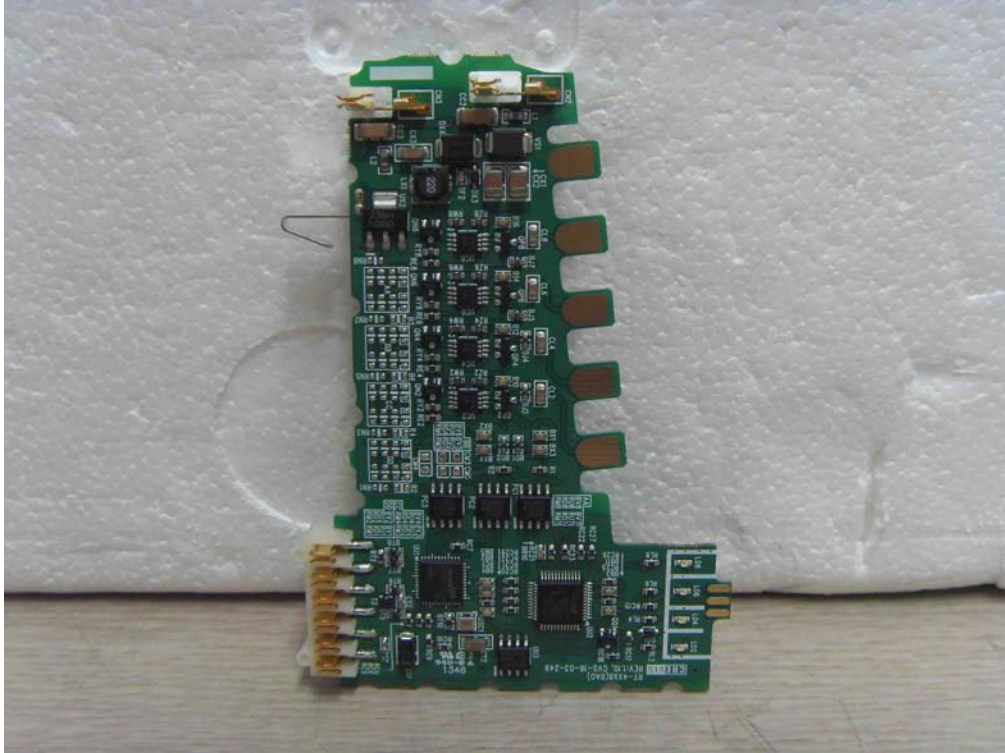
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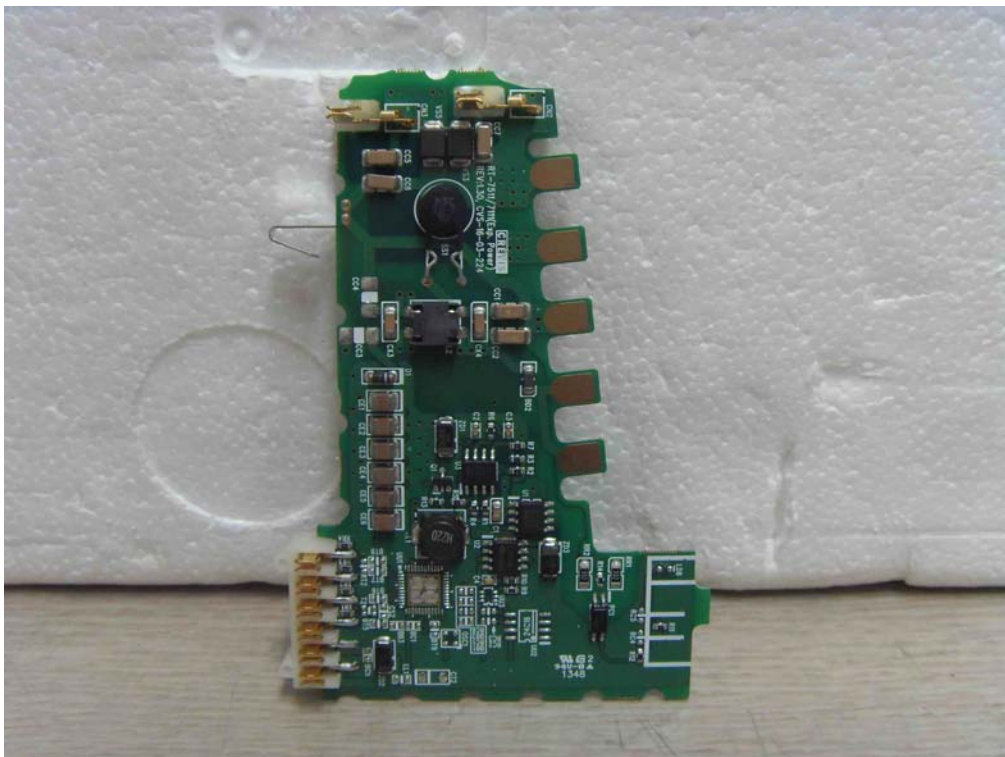
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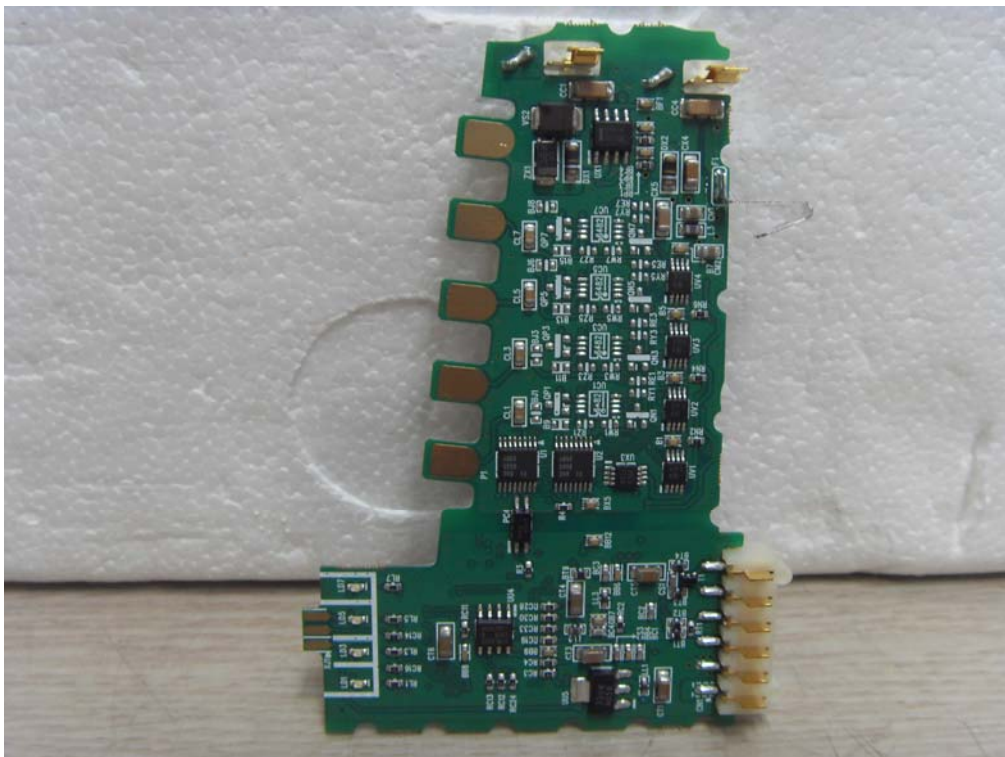
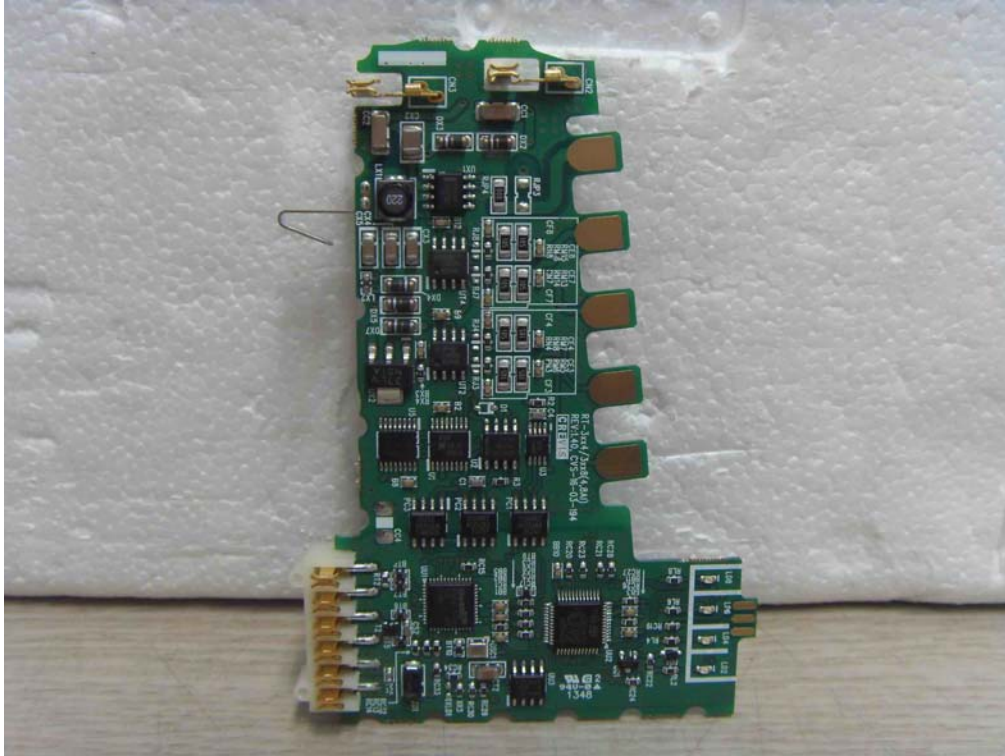
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