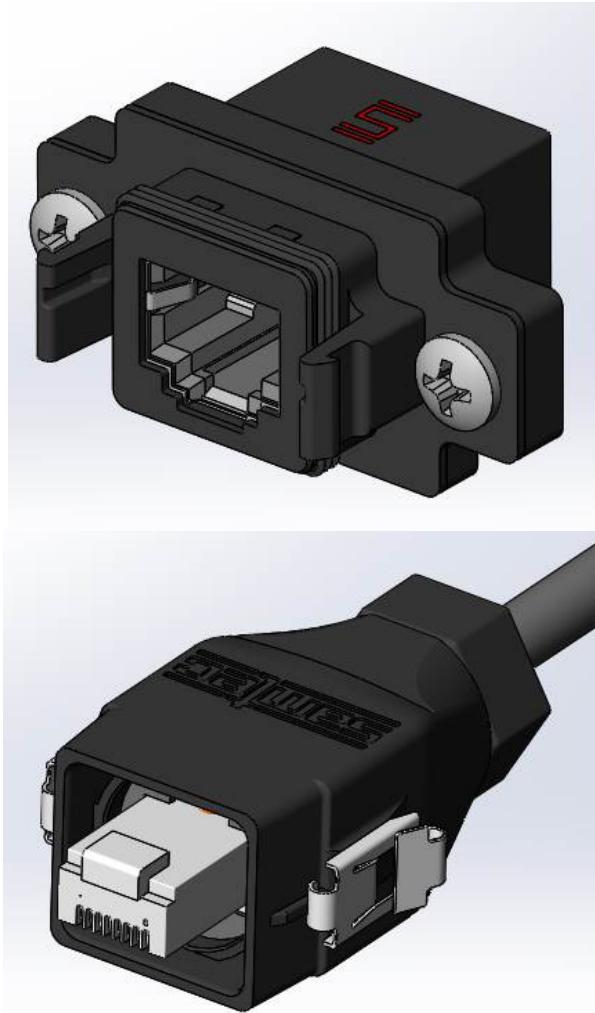




Project Number: Design Qualification Test Report	Tracking Code: 653052_Report_Rev_1
Requested by: Aaron Jones	Date: 8/28/2015
Part #: RCEF-G-01/RCEF-G-02/RPBE-01-01-E	
Part description: RCEF/RPBE	Tech: Kason He
Test Start: 8/19/2015	Test Completed: 8/21/2015



**DESIGN QUALIFICATION TEST REPORT  
RCEF/RPBE  
RCEF-G-01/RCEF-G-02/RPBE-01-01-E**

Tracking Code: 653052_Report_Rev_1	Part #: RCEF-G-01/RCEF-G-02/RPBE-01-01-E
Part description: RCEF/RPBE	

## REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
8/28/2015	1	Initial Issue	KH

Tracking Code: 653052_Report_Rev_1	Part #: RCEF-G-01/RCEF-G-02/RPBE-01-01-E
Part description: RCEF/RPBE	

## **CERTIFICATION**

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to ISO 10012-1 and ANSI/NCSL 2540-1, as applicable.

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### **SCOPE**

To perform the following tests: Design Qualification test. Please see test plan.

### **APPLICABLE DOCUMENTS**

Standards: EIA Publication 364

### **TEST SAMPLES AND PREPARATION**

- 1) All materials were manufactured in accordance with the applicable product specification.
- 2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
- 3) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
- 4) Any additional preparation will be noted in the individual test sequences.

## FLOWCHARTS

### Dust/Water

#### IPx7 Water Submersion

Group 1  
RCEF-G-02  
RPBE-01-01-E  
6 Assemblies

Group 12  
RCEF-G-01  
RPBE-01-01-E  
6 Assemblies

Step	Description
1.	Water Submersion - IPX7 (2) Depth = 1 meters
2.	Visual Inspection

Step	Description
1.	Water Submersion - IPX7 (2) Depth = 1 meters
2.	Visual Inspection

#### IPx8 Deep Water Submersion

Group 2  
RCEF-G-02  
RPBE-01-01-E  
3 Assemblies

Group 3  
RCEF-G-02  
RPBE-01-01-E  
3 Assemblies

Group 4  
RCEF-G-02  
RPBE-01-01-E  
3 Assemblies

Group 5  
RCEF-G-02  
RPBE-01-01-E  
3 Assemblies

Step	Description
1.	Water Submersion - IPX8 (3) Depth = 2 meters Duration = 30 min
2.	Visual Inspection

Step	Description
1.	Water Submersion - IPX8 (3) Depth = 3 meters Duration = 30 min
2.	Visual Inspection

Step	Description
1.	Water Submersion - IPX8 (3) Depth = 4 meters Duration = 30 min
2.	Visual Inspection

Step	Description
1.	Water Submersion - IPX8 (3) Depth = 5 meters Duration = 30 min
2.	Visual Inspection

Group 6  
RCEF-G-02  
RPBE-01-01-E  
3 Assemblies

Group 7  
RCEF-G-02  
RPBE-01-01-E  
3 Assemblies

Group 8  
RCEF-G-02  
RPBE-01-01-E  
3 Assemblies

Group 9  
RCEF-G-02  
RPBE-01-01-E  
3 Assemblies

Step	Description
1.	Water Submersion - IPX8 (3) Depth = 6 meters Duration = 30 min
2.	Visual Inspection

Step	Description
1.	Water Submersion - IPX8 (3) Depth = 7 meters Duration = 30 min
2.	Visual Inspection

Step	Description
1.	Water Submersion - IPX8 (3) Depth = 8 meters Duration = 30 min
2.	Visual Inspection

Step	Description
1.	Water Submersion - IPX8 (3) Depth = 9 meters Duration = 30 min
2.	Visual Inspection

## FLOWCHARTS Continued

Group 10

RCEF-G-02  
RPBE-01-01-E  
3 Assemblies

Group 13

RCEF-G-01  
RPBE-01-01-E  
3 Assemblies

Group 14

RCEF-G-01  
RPBE-01-01-E  
3 Assemblies

Group 15

RCEF-G-01  
RPBE-01-01-E  
3 Assemblies

**Step**   **Description**

1. Water Submersion - IPX8<sup>(3)</sup>  
Depth = 10 meters  
Duration = 30 min
2. Visual Inspection

**Step**   **Description**

1. Water Submersion - IPX8<sup>(3)</sup>  
Depth = 2 meters  
Duration = 30 min
2. Visual Inspection

**Step**   **Description**

1. Water Submersion - IPX8<sup>(3)</sup>  
Depth = 3 meters  
Duration = 30 min
2. Visual Inspection

**Step**   **Description**

1. Water Submersion - IPX8<sup>(3)</sup>  
Depth = 4 meters  
Duration = 30 min
2. Visual Inspection

Group 16

RCEF-G-01  
RPBE-01-01-E  
3 Assemblies

Group 17

RCEF-G-01  
RPBE-01-01-E  
3 Assemblies

Group 18

RCEF-G-01  
RPBE-01-01-E  
3 Assemblies

Group 19

RCEF-G-01  
RPBE-01-01-E  
3 Assemblies

**Step**   **Description**

1. Water Submersion - IPX8<sup>(3)</sup>  
Depth = 5 meters  
Duration = 30 min
2. Visual Inspection

**Step**   **Description**

1. Water Submersion - IPX8<sup>(3)</sup>  
Depth = 6 meters  
Duration = 30 min
2. Visual Inspection

**Step**   **Description**

1. Water Submersion - IPX8<sup>(3)</sup>  
Depth = 7 meters  
Duration = 30 min
2. Visual Inspection

**Step**   **Description**

1. Water Submersion - IPX8<sup>(3)</sup>  
Depth = 8 meters  
Duration = 30 min
2. Visual Inspection

Group 20

RCEF-G-01  
RPBE-01-01-E  
3 Assemblies

Group 21

RCEF-G-01  
RPBE-01-01-E  
3 Assemblies

**Step**   **Description**

1. Water Submersion - IPX8<sup>(3)</sup>  
Depth = 9 meters  
Duration = 30 min
2. Visual Inspection

**Step**   **Description**

1. Water Submersion - IPX8<sup>(3)</sup>  
Depth = 10 meters  
Duration = 30 min
2. Visual Inspection

**IP6x Dust**Group 11

RCEF-G-02  
RPBE-01-01-E  
6 Assemblies

Group 22

RCEF-G-01  
RPBE-01-01-E  
6 Assemblies

**Step**   **Description**

1. Dust - IP6X<sup>(1)</sup>
2. Visual Inspection

**Step**   **Description**

1. Dust - IP6X<sup>(1)</sup>
2. Visual Inspection

(1) Dust - IP6X = CEI/IEC 60529

(2) Water Submersion - IPX7 = CEI/IEC 60529

(3) Water Submersion - IPX8 = CEI/IEC 60529

Tracking Code: 653052_Report_Rev_1	Part #: RCEF-G-01/RCEF-G-02/RPBE-01-01-E
Part description: RCEF/RPBE	

## **ATTRIBUTE DEFINITIONS**

The following is a brief, simplified description of attributes.

### **WATER TESTING:**

- 1) Reference document: CEI/IEC 60529 Code IPX7 and IPX8
- 2) Required torque on MS-632-375-P-P-S for RPBE-01-01-E is 45IN-OZ±10

### **DUST TESTING:**

- 1) Reference document: CEI/IEC 60529 Code IP6X
- 2) Required torque on MS-632-375-P-P-S for RPBE-01-01-E is 45IN-OZ±10

## RESULTS

**IPX7 Testing (Water)**  
**RCEF-G-01/RPBE-01-01-E**

	<u>Initial (Before Exposure)</u>	<u>After Exposure</u>
Water	No Water Present	No Water Present

**RCEF-G-02/RPBE-01-01-E**

	<u>Initial (Before Exposure)</u>	<u>After Exposure</u>
Water	No Water Present	No Water Present

**IPX8 Testing (Water)****RCEF-G-01/RPBE-01-01-E (10 m)**

	<u>Initial (Before Exposure)</u>	<u>After Exposure</u>
Water	No Water Present	No Water Present

**RCEF-G-02/RPBE-01-01-E (10 m)**

	<u>Initial (Before Exposure)</u>	<u>After Exposure</u>
Water	No Water Present	No Water Present

**IP6X Testing (Dust)****RCEF-G-01/RPBE-01-01-E**

	<u>Initial (Before Exposure)</u>	<u>After Exposure</u>
Dust	No Dust Present	No Dust Present

**RCEF-G-02/RPBE-01-01-E**

	<u>Initial (Before Exposure)</u>	<u>After Exposure</u>
Dust	No Dust Present	No Dust Present

Tracking Code: 653052_Report_Rev_1	Part #: RCEF-G-01/RCEF-G-02/RPBE-01-01-E
Part description: RCEF/RPBE	

## DATA SUMMARIES

### IPX7 Testing (Water) RCEF-G-01/RPBE-01-01-E

<b>Sample #</b>	<b>Visual Inspection</b>
1	Pass
2	Pass
3	Pass
4	Pass
5	Pass
6	Pass

### RCEF-G-02/RPBE-01-01-E

<b>Sample #</b>	<b>Visual Inspection</b>
7	Pass
8	Pass
9	Pass
10	Pass
11	Pass
12	Pass

### IPX8 Testing (Water) RCEF-G-01/RPBE-01-01-E (10 m)

<b>Sample #</b>	<b>Visual Inspection at 10 meters</b>
13	Pass
14	Pass
15	Pass

### RCEF-G-02/RPBE-01-01-E (10 m)

<b>Sample #</b>	<b>Visual Inspection at 10 meters</b>
16	Pass
17	Pass
18	Pass

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Part description: RCEF/RPBE	

## DATA SUMMARIES

### IP6X Testing (Dust) RCEF-G-01/RPBE-01-01-E

<b>Sample #</b>	<b>Visual Inspection</b>
19	Pass
20	Pass
21	Pass
22	Pass
23	Pass
24	Pass

### RCEF-G-02/RPBE-01-01-E

<b>Sample #</b>	<b>Visual Inspection</b>
25	Pass
26	Pass
27	Pass
28	Pass
29	Pass
30	Pass

Tracking Code: 653052_Report_Rev_1	Part #: RCEF-G-01/RCEF-G-02/RPBE-01-01-E
Part description: RCEF/RPBE	

## **EQUIPMENT AND CALIBRATION SCHEDULES**

Equipment #: HZ-IPX7-01

Description: IP-67 1.0 Meter Water Column Chamber

Manufacturer: Samtec Machine

Model: N/A

Serial #: N/A

Accuracy: No Calibration Required

Equipment #: HZ-IPX8-01

Description: IP-68 10 Meter Water Column Chamber

Manufacturer: Samtec Machine

Model: N/A

Serial #: N/A

Accuracy: No Calibration Required

Equipment #: HZ-IP6X-01

Description: IP-6X Dust Tester

Manufacturer: Samtec Machine

Model: N/A

Serial #: N/A

Accuracy: No Calibration Required