



HARWIN

Test Report Summary

HT08901

General Testing for
S1811-46R 0.5mm SMT RFI Shield Clip

1. Introduction

1.1. Description and Purpose

The purpose of this test programme is to confirm the environmental and mechanical performance of the 0.5mm SMT RFI Shield Clip.

1.2. Conclusion

This report is a summary of the testing documented in QA000450. Under the specified conditions, the requirements for environmental and mechanical performance testing for S1811-46R were met. The product specification data was determined using the results of this validation programme.

2. Test Specifications

2.1. List of Test Samples

- S1811-46R – 0.5mm SMT RFI Shield Clip mounted to HM2384 PCB Test Board.

2.2. Specification Parameters

Testing Standard	Description of Test	Section	Page No.
EIA-364-09C: 1999	Durability	3.1	2-3
N/A	Force Vs. Deflection	3.2	4
N/A	PCB Retention	3.3	4
EIA-364-32C: 2000	Thermal Shock	3.4	5
EIA-364-31B: 2000	Humidity	3.5	6
EIA-364-17B: 1999	Temperature Life	3.6	6
EIA-364-26B: 1999	Salt Spray	3.7	6-7

3. Test Method and Results

3.1. Durability: EIA-364-09C: 1999 / EIA-364-13C: 2006

Methodology: The shield clips assembled to boards were mated with three different sized thickness gauges (0.4mm, 0.5mm and 0.6mm) at a speed of 25mm/min for 20 cycles. Insertion and withdrawal force were measured. Samples were also tested post-conditioning.



Durability Test Setup.

Results: Insertion Forces Pre-Conditioning

Part Number	Gauge (mm)	Initial (N)	Maximum (N)	Minimum (N)	Final (N)	Average (N)	Calculated Average Force to Mate Shield Can to four Shield Clips (N)
S1811-46R	0.40	4.81	5.41	2.35	2.52	3.77	15.09
	0.50	15.70	18.13	6.81	9.13	12.44	49.77
	0.60	20.84	25.26	12.07	13.91	18.02	72.08

Results: Withdrawal Forces Pre-Conditioning

Part Number	Gauge (mm)	Initial (N)	Maximum (N)	Minimum (N)	Final (N)	Average (N)	Calculated Average Force to Mate Shield Can to four Shield Clips (N)
S1811-46R	0.40	1.46	1.52	1.13	1.18	1.32	5.29
	0.50	2.87	3.27	2.05	2.50	2.67	10.69
	0.60	3.84	4.16	3.06	3.51	3.64	14.57

Results: Insertion Forces Post-Conditioning

Part Number	Condition	Gauge (mm)	Initial (N)	Maximum (N)	Minimum (N)	Final (N)	Average (N)
S1811-46R	Salt Spray	0.40	5.88	6.14	4.37	5.04	5.36
		0.50	12.48	13.69	8.33	10.12	11.16
		0.60	18.49	20.60	11.89	14.46	16.36
	Temp life - 96 hours	0.40	4.60	5.36	2.34	2.69	3.75
		0.50	14.77	19.82	7.58	9.39	12.89
		0.60	19.59	21.95	9.95	11.29	15.70
	Thermal Shock	0.40	4.58	5.24	2.55	3.40	3.94
		0.50	13.43	14.59	7.76	10.02	11.45
		0.60	23.00	24.31	13.36	15.23	18.98
	Humidity	0.40	6.58	6.98	4.43	5.00	5.75
		0.50	15.91	17.16	10.70	11.87	13.91
		0.60	19.75	20.63	10.81	13.56	16.19

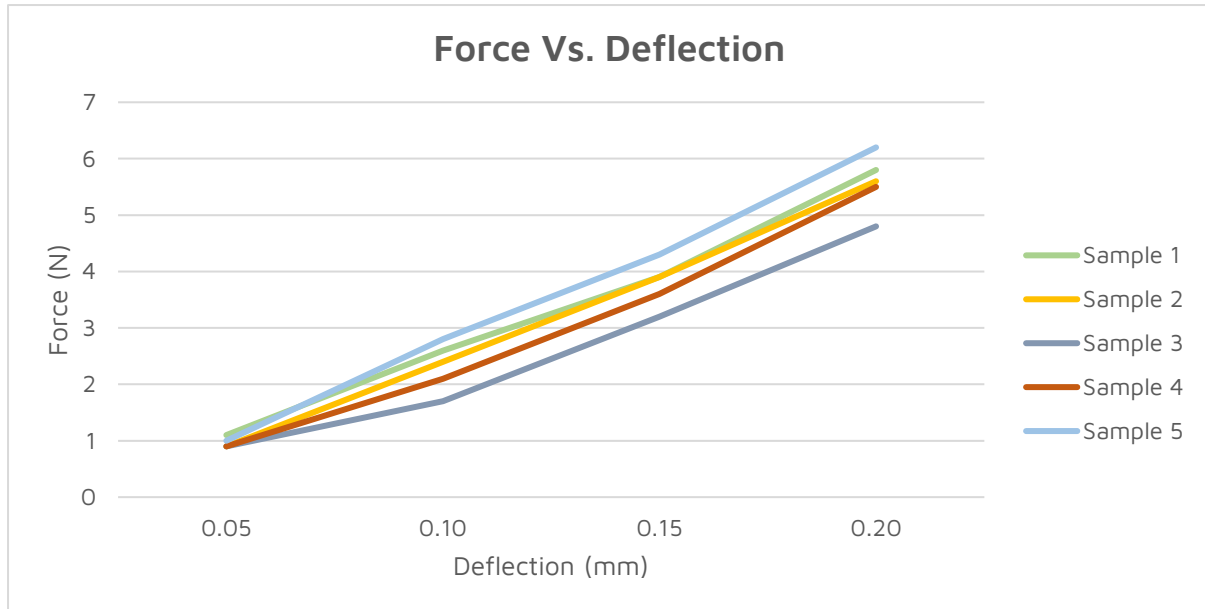
Results: Withdrawal Forces Post-Conditioning

Part Number	Condition	Gauge (mm)	Initial (N)	Maximum (N)	Minimum (N)	Final (N)	Average (N)
S1811-46R	Salt Spray	0.40	1.69	2.01	1.00	1.48	1.55
		0.50	2.63	2.73	2.13	2.48	2.49
		0.60	3.86	4.64	3.36	4.09	3.99
	Temp life - 96 hours	0.40	1.38	1.44	1.17	1.29	1.32
		0.50	2.61	3.12	2.10	2.56	2.60
		0.60	3.45	3.54	2.91	3.22	3.28
	Thermal Shock	0.40	1.46	1.56	1.17	1.26	1.36
		0.50	2.95	3.03	2.55	2.84	2.84
		0.60	3.84	4.85	3.00	3.63	3.83
	Humidity	0.40	2.03	2.13	1.59	1.84	1.90
		0.50	3.22	3.45	2.64	3.37	3.17
		0.60	3.51	3.95	2.73	3.25	3.36

3.2. Force Vs. Deflection

Methodology: Components S1811-46R were assembled to test boards. A lateral force was applied to one contact side (wing) at deflection increments of 0.05mm - the force at each step was noted. Deflection continued up to 0.20mm for all samples. The distance of permanent set after maximum deflection was measured.

Results:



Deflection (mm)	Permanent Set (mm)				
	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
0.05	0.01	0.01	0.01	0.02	0.01
0.10	0.02	0.02	0.02	0.04	0.02
0.15	0.03	0.03	0.03	0.05	0.03
0.20	0.04	0.04	0.04	0.06	0.04

3.3. PCB Retention to Board

Methodology: Shield clips were assembled on to test boards. A lateral force was applied in the Y-Axis to the wings of the components until they broke or peeled away from the board, this force was recorded.

Results: Retention to Board

Test Setup	Force Applied (N)
1	116.90
2	105.80
3	99.90
4	101.60
5	114.70
Average	107.78

Failure mode observed: PCB solder pad has been removed/de-laminated from the board.



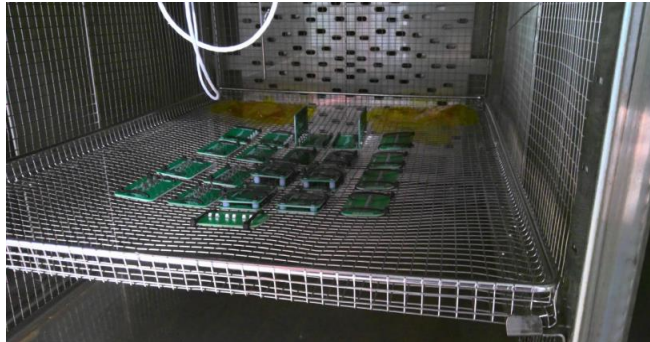
PCB Retention Sample Post-Testing

3.4. Thermal Shock: EIA-364-32C: 2000

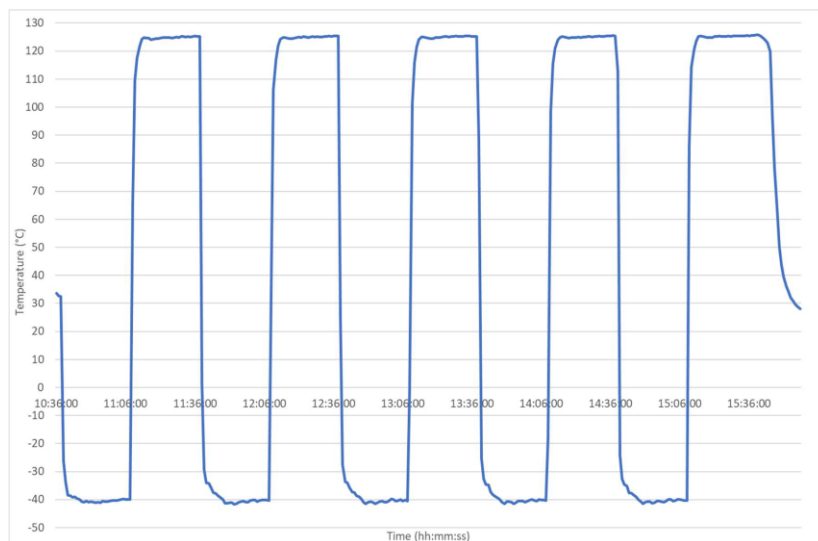
Methodology: Thermal Shock Testing was performed on the shield clips assembled to test boards in accordance with BS EN 60068-2-14:2009 and EIA-364-32C (modified temperatures) using the following conditions:

- Upper temperature: 125°C
- Lower temperature: -40°C
- Dwell at each extreme: 30 minutes
- Number of cycles: 5

The samples were measured for durability, as well as a visual inspection after testing.



Thermal Shock Test Setup



Chamber Temperature Response Plot Generated During Testing

Results: There were no obvious changes as a result.



Thermal Shock Samples Post-Conditioning.

3.5. Humidity: EIA-364-31B: 2000, Method 2, Test Condition A

Methodology: A Steady State Humidity test was performed on the shield clips assembled to test boards, in accordance with EIA-364-31B, using the following conditions:

- Ambient temperature +40°C
- Steady State Humidity at 90-95% Rh
- Duration: 96hrs

The samples were measured for durability, as well as visual inspection after testing.



Humidity Test Setup

Results: There were no obvious changes as a result.

3.6. Temperature Life (Without Load): EIA-364-17B: 1999, Method A, Test Condition 5, Test Time Condition A

Methodology: Testing was performed on the shield clips assembled to test boards. The test conditions were as follows:

- Test chamber temperature +125°C
- Duration: 96hrs

The samples were measured for durability, as well as visual inspection after testing.

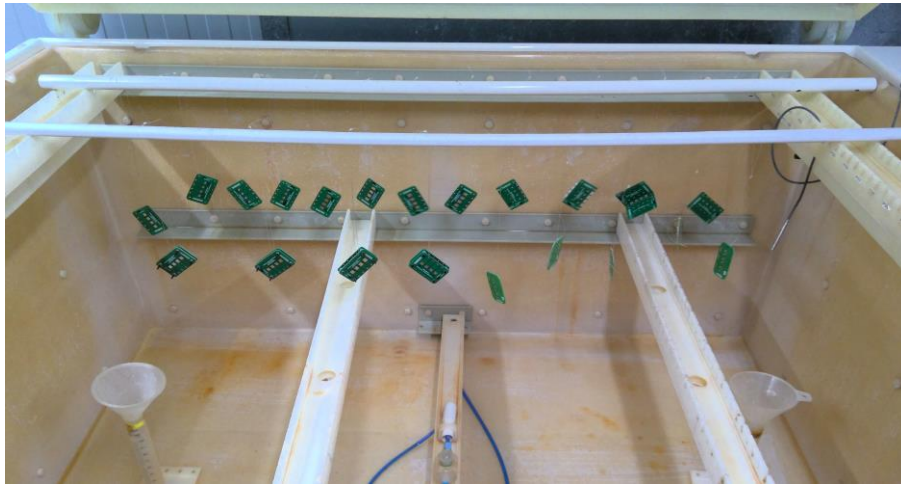
Results: There were no obvious changes as a result.

3.7. Salt Spray: EIA-364-26B: 1999, Condition B / BS EN 60068-2-11:1999, Test Ka

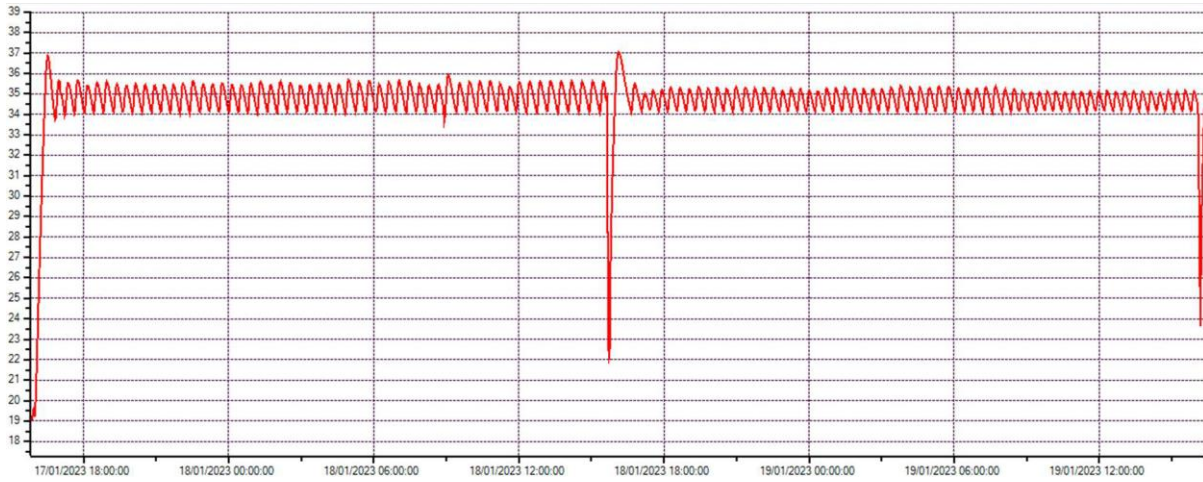
Methodology: A salt mist test was performed on the shield clips mounted to test boards. The test conditions were as follows:

- 48 hours continuous exposure with 5% NaCL at +35°C
- Washed and then dried for 16 hours at +38°C

On completion of the salt mist duration, the samples were dipped in running water and placed into a temperature chamber at +38°C for 16 hours. The samples were measured for durability, as well as a visual inspection after testing.

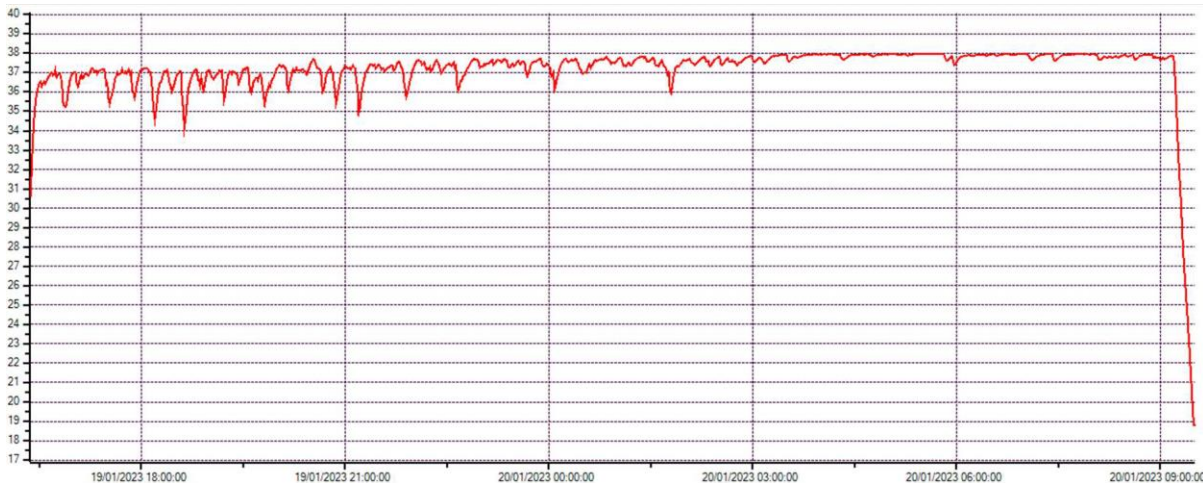


Salt Spray Test Setup



Salt Spray Test Temperature Response Plot

Note: The spike in the plot was due to the chamber being accessed to undertake the daily fallout checks.



Salt spray Test Drying Chamber Temperature Response Plot

Note: During 16 hour drying process, the chamber periodically dropped outside of the test standard tolerances.

Results: There were no obvious visual changes as a result.



Salt Spray Samples Post Conditioning