TEST REPORT

PRODUCT ENGINEERING LABORATORY

RL. **130502**

Material / Parts description:	PN:	Revision:	Batch:
POSITIVE LOCK RECEPTACLE (ACTUAL RAW MATERIAL - BRASS 260)	**880645-6**	**B1**	**TRY-OUT**
POSITIVE LOCK RECEPTACLE (PROPOSED RAW MATERIAL - BRASS 268)	**880645-6**	**B1**	**TRY-OUT**
POSITIVE LOCK RECEPTACLE (PROPOSED RAW MATERIAL - BRASS 272)	**880645-6**	**B1**	**TRY-OUT**

Requester: WASHINGTON L. STEFANI

Dept: CIS

Customer: **VARIOUS**

Supplier: **TE BRAZIL**

Confidentiality:

( ) 1- CONFIDENTIAL
(X) 2- TYCO RESTRICTED
( ) 3- ADDRESSED CUSTOMER
( )

Distribution:

(X) REQUESTER
( )
( )
( )

Purpose:
1 - PRODUCT VALIDATION

Historic:

ITEM ALREADY TESTED FOR AUTOMOTIVE DIVISION.
THE RESULTS WERE EXTRACTED FROM THE REPORT 111252. FOR THIS CURRENT REPORT FOR CIS DIVISION THE SPECIFIED VALUE FOR *GROUP 5 - item b - TEMPERATURE RISE X CURRENT* WAS CHANGED. FOR DETAILS, PLEASE SEE PAGE 24.

Test(s) Executed :

SEE PAGE 2

Specification(s):

ACCORDING TO TE BRAZIL TEST PLAN ANNEX

Conclusion:

INFORMATIVE TEST REPORT FOR REQUESTER'S EVALUATION.

Feb 22, 2013	***Signature on file**	***Signature on file**
Date	Performed by	Responsible
	DIOGO BIASETTO ROJAS	PAULO S. ALMEIDA
	LABORATORY ENGINEER	LABORATORY CORDINATOR

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II- Accomplished tests (according to test plan - January 14, 2011 - annex)

TEST REPORT

PRODUCT ENGINEERING

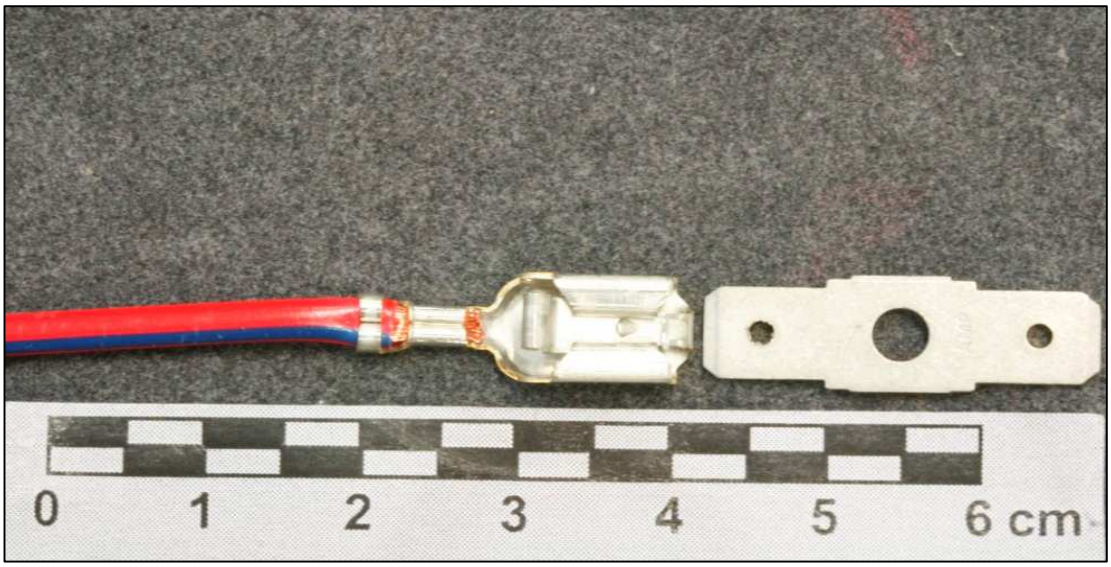
LABORATORY

RL. **130502**

I- GENERAL PRESENTATION

a. SAMPLING:

270 parts Rec Positive Lock terminals, PN 880645-6, revision B1, crimped with 2,5mm² wire gauge.
75 parts Tab terminals, PN 62627-3, revision P1.
Note 1: Rec terminals stamped with brass alloy 260 (actual raw material - from production), brass alloy 268 (proposed raw material) and brass alloy 272 (proposed raw material).
Note 2: Tab terminals supplied by TE USA. Revision according to product drawing.



Picture 1: Product tested

b. PURPOSE:

Product validation. Tests for possible alloy brass change.

c. ACCOMPLISHMENT:

Tests accomplished at Bragança Paulista Electrical Components Test Laboratory and external Laboratory.
Period: from July, 2011 to January, 2012.

d. ENVIRONMENTAL CONDITIONS:

Temperature: 23±5ºC.
Humidity: 45 - 70%.

e. SPECIFICATION:

According to TE Brazil Test Plan - July 14, 2011 annex.

1. GROUP 1- MECHANICAL TESTS

a. UNLOCKED TAB / REC FIRST INSERTION FORCE

Specification:
Informative test, there is not specification.

Equipment:
Imada Digital Dinamometer, model DPS 11R, ref. TE 92-339017-076.

Procedure:
Measure the unlocked first insertion force manually.
Accomplish test with stamped Tab / Rec terminals.
Note: Measure 20 terminals from each alloy (260, 268 e 272).

Specified value:
Informative test, there is not specified value.

Result:

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
1	28,58	11	28,80		
2	25,91	12	26,04		
3	24,11	13	26,69		
4	30,07	14	26,36		
5	32,77	15	29,06		
6	25,06	16	27,42		
7	30,17	17	27,52		
8	28,11	18	22,38	Maximum:	32,77
9	27,71	19	28,25	Average:	27,52
10	27,99	20	27,42	Minimum:	22,38

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
21	28,28	31	30,69		
22	35,77	32	26,93		
23	33,40	33	30,34		
24	32,05	34	28,04		
25	32,25	35	29,28		
26	32,30	36	28,41		
27	27,13	37	31,33		
28	29,47	38	32,37	Maximum:	35,77
29	31,89	39	30,97	Average:	30,50
30	28,44	40	30,63	Minimum:	26,93

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
41	28,15	51	30,88		
42	30,24	52	32,45		
43	29,60	53	28,74		
44	29,88	54	32,69		
45	29,58	55	31,58		
46	27,98	56	34,76		
47	32,54	57	31,36		
48	29,18	58	30,42	Maximum:	34,76
49	33,81	59	27,61	Average:	30,62
50	30,89	60	29,97	Minimum:	27,61

Conclusion: For reference only.

b. UNLOCKED TAB / REC FIRST EXTRACTION FORCE

Specification and equipment:

See item "1a" on page 4.

Procedure:

Measure the unlocked first extraction force manually.

Accomplish test with stamped Tab / Rec terminals.

Note: Measure 20 terminals from each alloy (260, 268 e 272).

Specified value:

Informative test, there is not specified value.

Result:

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
1	12,35	11	17,86		
2	16,55	12	19,12		
3	20,04	13	22,45		
4	17,82	14	18,10		
5	19,39	15	17,50		
6	15,10	16	19,39		
7	22,06	17	18,29		
8	17,55	18	19,05	Maximum:	22,45
9	18,11	19	19,09	Average:	18,16
10	17,42	20	15,88	Minimum:	12,35

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
21	21,83	31	20,67		
22	19,88	32	19,05		
23	21,92	33	19,87		
24	19,15	34	18,48		
25	17,95	35	17,17		
26	24,56	36	17,48		
27	18,76	37	18,94		
28	18,07	38	16,67	Maximum:	24,56
29	18,73	39	19,78	Average:	19,45
30	19,46	40	20,55	Minimum:	16,67

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
41	19,31	51	18,14		
42	17,78	52	20,76		
43	16,77	53	19,00		
44	19,45	54	18,61		
45	18,14	55	17,47		
46	18,00	56	20,11		
47	20,12	57	17,99		
48	21,97	58	19,95	Maximum:	21,97
49	19,21	59	18,47	Average:	18,98
50	17,66	60	20,76	Minimum:	16,77

Conclusion: For reference only.

c. LOCKED TAB / REC SIXTH EXTRACTION FORCE

Specification, equipment:

See item "1a" on page 4.

Procedure:

Measure the locked sixth extraction force manually.

Accomplish test with stamped Tab / Rec terminals.

Note: Measure 20 terminals from each alloy (260, 268 e 272).

Specified value:

Informative test, there is not specified value.

Result:

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
1	6,12	**11**	12,41		
2	8,82	**12**	14,34		
3	8,32	**13**	6,25		
4	7,79	**14**	6,36		
5	15,44	**15**	6,41		
6	8,56	**16**	13,00		
7	14,00	**17**	6,99		
8	7,35	**18**	13,69	**Maximum:**	16,20
9	10,99	**19**	16,20	**Average:**	10,51
10	14,34	**20**	12,89	**Minimum:**	6,12

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
21	10,95	**31**	14,43		
22	14,84	**32**	14,72		
23	16,27	**33**	15,77		
24	14,19	**34**	8,58		
25	13,74	**35**	8,19		
26	10,08	**36**	7,92		
27	16,83	**37**	12,48		
28	18,50	**38**	7,34	**Maximum:**	18,50
29	11,57	**39**	16,36	**Average:**	12,75
30	13,09	**40**	9,11	**Minimum:**	7,34

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
41	13,06	**51**	8,99		
42	14,37	**52**	14,05		
43	14,96	**53**	14,49		
44	17,87	**54**	10,31		
45	15,04	**55**	9,39		
46	13,27	**56**	14,03		
47	14,52	**57**	8,16		
48	15,81	**58**	15,08	**Maximum:**	17,87
49	16,74	**59**	11,72	**Average:**	13,41
50	15,18	**60**	11,22	**Minimum:**	8,16

Conclusion: Informative.

d. LOCKED TAB / REC EXTRACTION FORCE

Specification, equipment:

See item "1a" on page 4.

Procedure:

Measure the locked extraction force manually.

Accomplish test with stamped Tab / Rec terminals.

Note: Measure 20 terminals from each alloy (260, 268 e 272).

Specified value:

Informative test, there is not specified value.

Result:

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
1	114,2	11	119,2		
2	115,2	12	118,2		
3	113,8	13	118,7		
4	115,2	14	116,2		
5	122,1	15	117,2		
6	114,2	16	118,7		
7	117,7	17	119,2		
8	113,8	18	115,2	Maximum:	123,6
9	113,8	19	123,6	Average:	117,0
10	116,7	20	117,7	Minimum:	113,8

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
21	107,9	31	109,8		
22	110,8	32	116,2		
23	109,8	33	113,2		
24	110,3	34	110,8		
25	112,3	35	115,2		
26	107,9	36	110,3		
27	109,8	37	109,3		
28	112,3	38	114,7	Maximum:	119,2
29	113,3	39	119,2	Average:	112,2
30	115,2	40	114,7	Minimum:	107,9

Conclusion: For refernce only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material)

SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
41	114,7	51	110,8		
42	110,3	52	115,7		
43	112,8	53	114,7		
44	114,7	54	116,2		
45	115,2	55	117,2		
46	115,2	56	112,8		
47	110,8	57	116,2		
48	116,7	58	117,0	Maximum:	117,2
49	113,8	59	113,3	Average:	114,5
50	115,7	60	116,7	Minimum:	110,3

Conclusion: For reference only.

2. GROUP 2- ENVIRONMENTAL / MECHANICAL TESTS

Perform exposures a, b and c on all samples, then measure parameters.

a. TEMPERATURE/ HUMIDITY CYCLING

Specification:

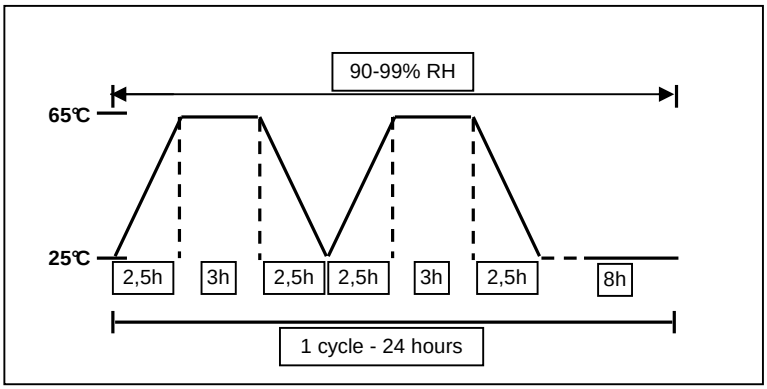
EIA 364-31B Method III.

Equipment:

Climatic chamber Weiss HK1 340, ref. TE 92-339032-004.

Procedure:

Soak the samples in a dry heat oven at a temperature of 50°C for 24 hours, then accomplish 10 continuos cycles as as shown on figure below:



Specified value:

Only conditioning.

b. TEMPERATURE LIFE

Specification:

EIA 364-17B.

Equipment:

Fanem oven, model 315 SE, ref. TE 93-339048-305.

Procedure:

Soak the samples in a dry oven heat at 105°C for 200 hours.

Specified value:

Only conditioning.

c. THERMAL SHOCK

Specification:

EIA 364-32C condition VIII.

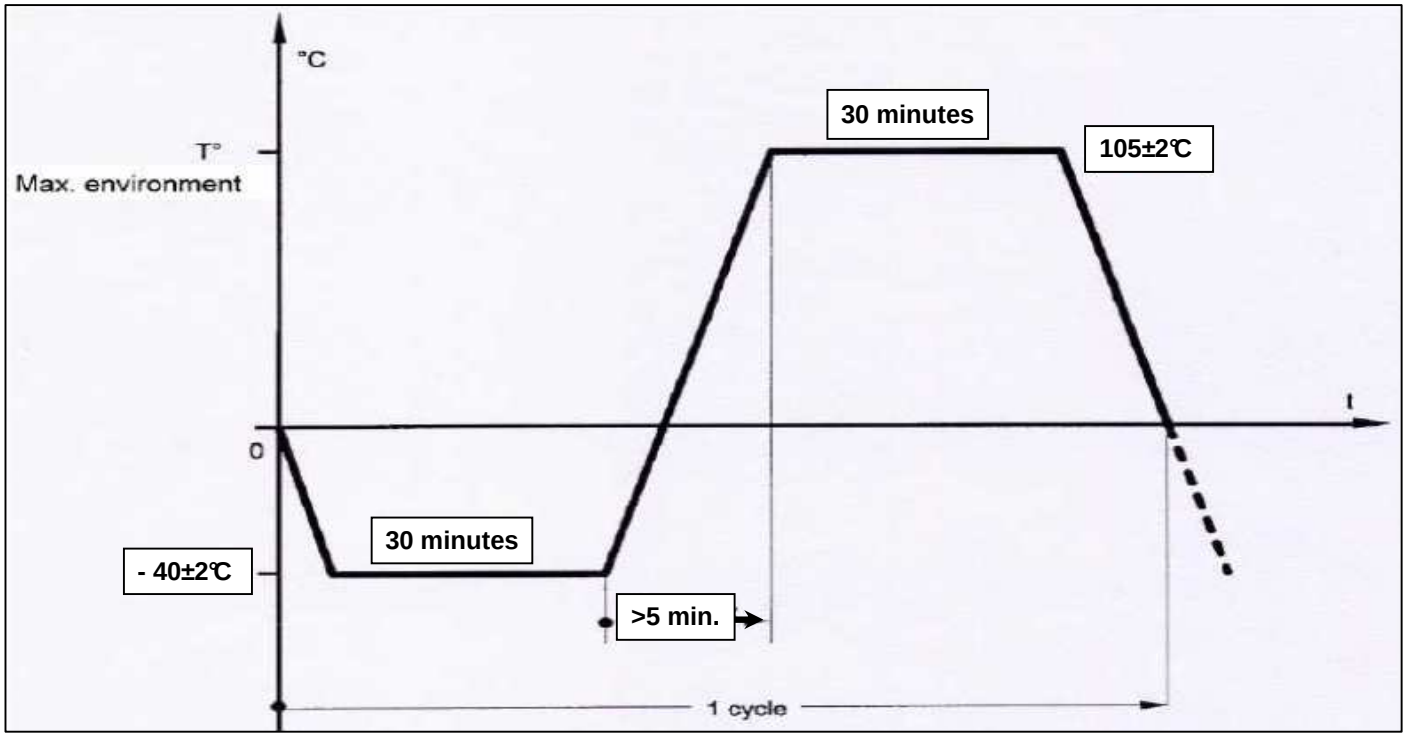
Equipment:

Fanem oven, model 315 SE, ref. TE 93-339048-305.

Freezer Indrell mod. 304D, ref. TE 93-339032-008.

Procedure:

Submit the samples to 25 thermal shocks cycles in accordance to figure below:



Specified value:

Only conditioning.

d. UNLOCKED TAB / REC FIRST INSERTION FORCE

Specification, equipment, procedure:

See item "1a" on page 4.

Specified value:

Informative test.

Result:

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production), wire gauge 2,5mm²

SAMPLE	FORCE [N]
61	35,07
62	37,33
63	28,94
64	31,00
65	39,39
66	46,25
67	35,50
68	36,00
69	38,26
70	35,43
Maximum:	46,25
Average:	36,32
Minimum:	28,94

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production), wire gauge 4,0mm²

SAMPLE	FORCE [N]
71	42,40
72	31,86
73	39,86
74	37,00
75	52,20
76	36,99
77	39,92
78	44,67
79	41,60
80	36,49
Maximum:	52,20
Average:	40,30
Minimum:	31,86

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material), wire gauge 2,5mm²

SAMPLE	FORCE [N]
81	42,46
82	35,25
83	43,71
84	35,17
85	40,19
86	44,80
87	43,77
88	35,87
89	32,49
90	50,00
Maximum:	50,00
Average:	40,37
Minimum:	32,49

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material), wire gauge 4,0mm²

SAMPLE	FORCE [N]
91	49,01
92	30,49
93	42,04
94	37,97
95	31,83
96	50,30
97	38,45
98	32,15
99	42,36
100	36,35
Maximum:	50,30
Average:	39,10
Minimum:	30,49

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material), wire gauge 2,5mm²

SAMPLE	FORCE [N]
101	36,96
102	45,24
103	44,65
104	40,21
105	49,71
106	34,66
107	43,74
108	43,44
109	33,67
110	49,00
Maximum:	49,71
Average:	42,13
Minimum:	33,67

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material), wire gauge 4,0mm²

SAMPLE	FORCE [N]
111	52,00
112	38,26
113	49,99
114	42,08
115	38,78
116	36,43
117	43,50
118	50,00
119	38,72
120	37,05
Maximum:	52,00
Average:	42,68
Minimum:	36,43

Conclusion: For reference only.

e. UNLOKED TAB / REC FIRST EXTRACTION FORCE

Specification, equipment, procedure:

See item "1b" on page 5.

Specified value:

Informative test.

Result:

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production), wire gauge 2,5mm²

SAMPLE	FORCE [N]
61	25,45
62	25,28
63	27,78
64	26,00
65	29,84
66	33,47
67	23,16
68	31,99
69	39,07
70	26,85
Maximum:	39,07
Average:	28,89
Minimum:	23,16

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production), wire gauge 4,0mm²

SAMPLE	FORCE [N]
71	32,03
72	26,47
73	26,74
74	27,63
75	18,42
76	28,88
77	26,28
78	21,05
79	20,16
80	28,47
Maximum:	32,03
Average:	25,61
Minimum:	18,42

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material), wire gauge 2,5mm²

SAMPLE	FORCE [N]
81	28,70
82	19,65
83	32,15
84	25,67
85	22,62
86	25,56
87	28,32
88	33,34
89	30,65
90	35,91
Maximum:	35,91
Average:	28,26
Minimum:	19,65

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material), wire gauge 4,0mm²

SAMPLE	FORCE [N]
91	39,56
92	26,81
93	31,28
94	29,67
95	21,84
96	23,13
97	22,05
98	27,92
99	33,16
100	25,53
Maximum:	39,56
Average:	28,10
Minimum:	21,84

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material), wire gauge 2,5mm²

SAMPLE	FORCE [N]
101	39,61
102	27,49
103	25,61
104	39,54
105	30,67
106	20,04
107	26,81
108	24,94
109	24,38
110	23,49
Maximum:	39,61
Average:	28,26
Minimum:	20,04

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material), wire gauge 2,5mm²

SAMPLE	FORCE [N]
111	30,61
112	27,53
113	24,50
114	20,37
115	34,88
116	24,78
117	31,94
118	25,79
119	28,20
120	28,08
Maximum:	34,88
Average:	27,67
Minimum:	20,37

Conclusion: For reference only.

3. GROUP 3- MECHANICAL TESTS

a. WIRE TENSILE STRENGTH

Specification:
Informative test. There is not specification.

Equipment:
Mecmesin Digital Dinamometer, model MFG 500, ref. TE 92-339017-001.

Procedure:
Speed: 50mm/minute.
Note: 20 terminals of each brass alloy (260, 268 e 272) were measured.

Specified value:
Informative test.

Results:
Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production)

2,5mm² wire gauge		4,0mm² wire gauge			
SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
181	222,2	191	428,7		
182	205,0	192	475,8		
183	206,0	193	462,5		
184	210,4	194	462,5		
185	231,0	195	500,3		
186	216,3	196	452,7		
187	210,4	197	434,1		
188	198,6	198	456,2	Maximum:	500,3
189	227,1	199	497,4	Average:	341,0
190	223,6	200	500,0	Minimum:	198,6

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material)

2,5mm² wire gauge		4,0mm² wire gauge			
SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
201	221,2	211	452,2		
202	227,1	212	442,9		
203	217,8	213	431,1		
204	219,2	214	464,5		
205	221,2	215	414,0		
206	223,6	216	442,9		
207	217,8	217	485,6		
208	211,9	218	411,5	Maximum:	485,6
209	225,6	219	438,0	Average:	331,9
210	228,1	220	441,0	Minimum:	211,9

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material)

2,5mm² wire gauge		4,0mm² wire gauge			
SAMPLE	FORCE [N]	SAMPLE	FORCE [N]		
221	192,2	231	472,8		
222	216,8	232	462,5		
223	213,3	233	445,4		
224	218,7	234	451,3		
225	210,4	235	462,5		
226	222,2	236	460,6		
227	222,7	237	483,1		
228	211,4	238	460,6	Maximum:	483,1
229	195,2	239	442,9	Average:	336,5
230	214,3	240	470,9	Minimum:	192,2

Conclusion: For reference only.

4. GROUP 4- ENVIRONMENTAL / MECHANICAL TESTS

a. TEMPERATURE / HUMIDITY CYCLING

See item "2a" on page 9.

b. TEMPERATURE LIFE

See item "2b" on page 9.

c. THERMAL SHOCK

See item "2c" on page 10.

d. WIRE TENSILE STRENGTH

Specification, equipment and procedure:

See item "3a" on page 17.

Specified value:

There are not specified values for 2,5mm² and 4,0mm² wire gauge. Informative test.

Result:

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production), wire gauge 2,5mm²

SAMPLE	FORCE [N]
121	233,5
122	220,7
123	210,4
124	207,0
125	227,6
126	224,1
127	233,5
128	222,7
129	230,5
130	220,0
Maximum:	233,5
Average:	223,0
Minimum:	207,0

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 260 (actual raw material - from production), wire gauge 4,0mm²

SAMPLE	FORCE [N]
131	593,5
132	551,8
133	546,8
134	582,2
135	565,1
136	566,0
137	564,6
138	550,3
139	569,5
140	544,0
Maximum:	593,5
Average:	563,4
Minimum:	544,0

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material), wire gauge 2,5mm²

SAMPLE	FORCE [N]
141	237,9
142	212,8
143	235,4
144	237,9
145	233,5
146	239,3
147	240,3
148	212,3
149	223,2
150	213,8
Maximum:	240,3
Average:	228,6
Minimum:	212,3

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 268 (proposed raw material), wire gauge 4,0mm²

SAMPLE	FORCE [N]
151	595,5
152	553,3
153	551,8
154	570,0
155	542,0
156	571,0
157	536,0
158	569,0
159	564,6
160	536,1
Maximum:	595,5
Average:	558,9
Minimum:	536,0

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material), wire gauge 2,5mm²

SAMPLE	FORCE [N]
161	240,3
162	230,0
163	228,1
164	238,4
165	213,8
166	235,9
167	232,0
168	239,3
169	218,7
170	224,1
Maximum:	240,3
Average:	230,1
Minimum:	213,8

Conclusion: For reference only.

Positive Lock terminals, PN 880645-6, revision B1, brass alloy 272 (proposed raw material), wire gauge 4,0mm²

SAMPLE	FORCE [N]
171	603,2
172	574,4
173	571,4
174	548,4
175	574,9
176	578,3
177	569,5
178	589,1
179	593,0
180	609,7
Maximum:	609,7
Average:	581,2
Minimum:	548,4

Conclusion: For reference only.

5. GROUP 5- ENVIRONMENTAL ELECTRICAL TESTS

a. LOW LEVEL RESISTANCE

Specification:

EIA 364-23A.

Positive lock AMP spec. 108-20051 B revision.

Equipment:

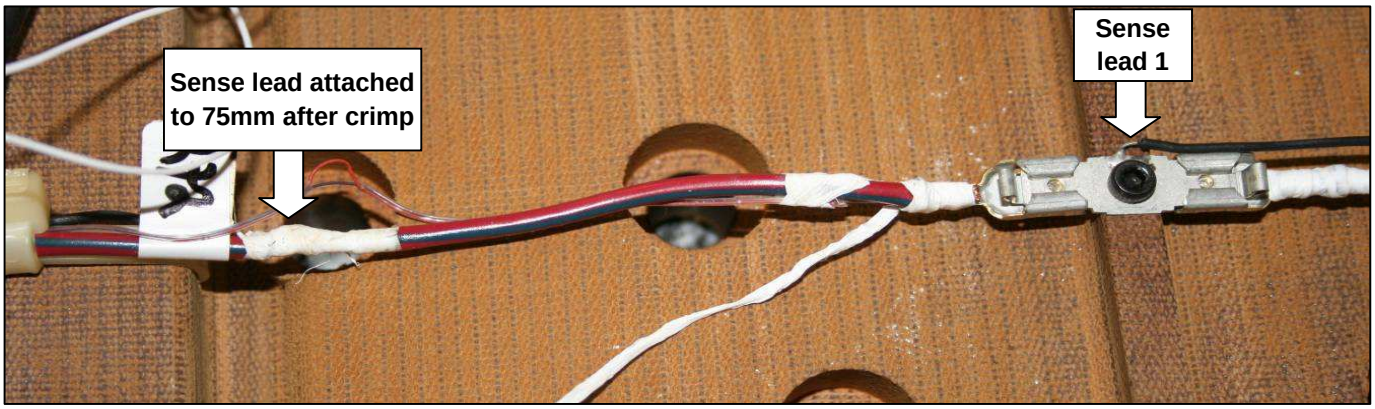
Digital power supply Agilent, model E3641, ref. TE 93-339036-019.

Data acquisition AGILENT, model 34972A, ref. TE 93-339048-872.

Procedure:

-After install, apply a current of 100mADC / 20mV to the terminals;

-Measure and record the voltage drop of each circuit individually from sense lead 1 to sense lead attached to 75mm after crimp of each cable. Discount 75mm of cable resistance.



Picture 2: Contact resistance measuring points.

Requirement:

Max. Initial contact resistance = 2mΩ.

Max. contact resistance after tests = 3mΩ.

Results:

CONTACT RESISTANCE [mΩ]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	0,59	251	0,74	261	0,68
242	0,63	252	0,95	262	0,58
243	0,56	253	0,61	263	0,50
244	0,58	254	0,61	264	0,52
245	0,58	255	0,54	265	0,53
246	0,57	256	0,56	266	0,54
247	0,52	257	0,54	267	0,66
248	0,55	258	0,55	268	0,58
249	0,57	259	0,56	269	0,55
250	0,72	260	0,65	270	0,58
Minimum:	0,52	Minimum:	0,54	Minimum:	0,50
Average:	0,59	Average:	0,63	Average:	0,57
Maximum:	0,72	Maximum:	0,95	Maximum:	0,68

Conclusion: Pass.

b. TEMPERATURE RISE X CURRENT

Specification:

EIA 364-70A Method 2.

UL 310/2003.

Equipment:

Digital power supply Agilent, model E3641, ref. TE 93-339036-019.

Data acquisition AGILENT, model 34972A, ref. TE 93-339048-872.

Digital power supply HP 6571 A, ref. TE 93-339036-021.

Procedure:

Apply a current able to produce a temperature rise of approximately 5 to 10ºC after thermal equilibrium occurs. stability is achieved;

Measure and record specimen temperature, ambient temperature, test current and voltage drop;

Repeat at minimum 4 consecutively increasing current levels. The highest test current level shall be the expected maximum operating current or the current level that produces a temperature rise of **30°C** (UL-310).

Consider the highest statical expected value ($\overline{X} + 3\sigma$).

Note: For the report 111252 the temperature rise value was 40ºC, according to test plan attached. For this report was considered the UL-310/2003 spec (30ºC).

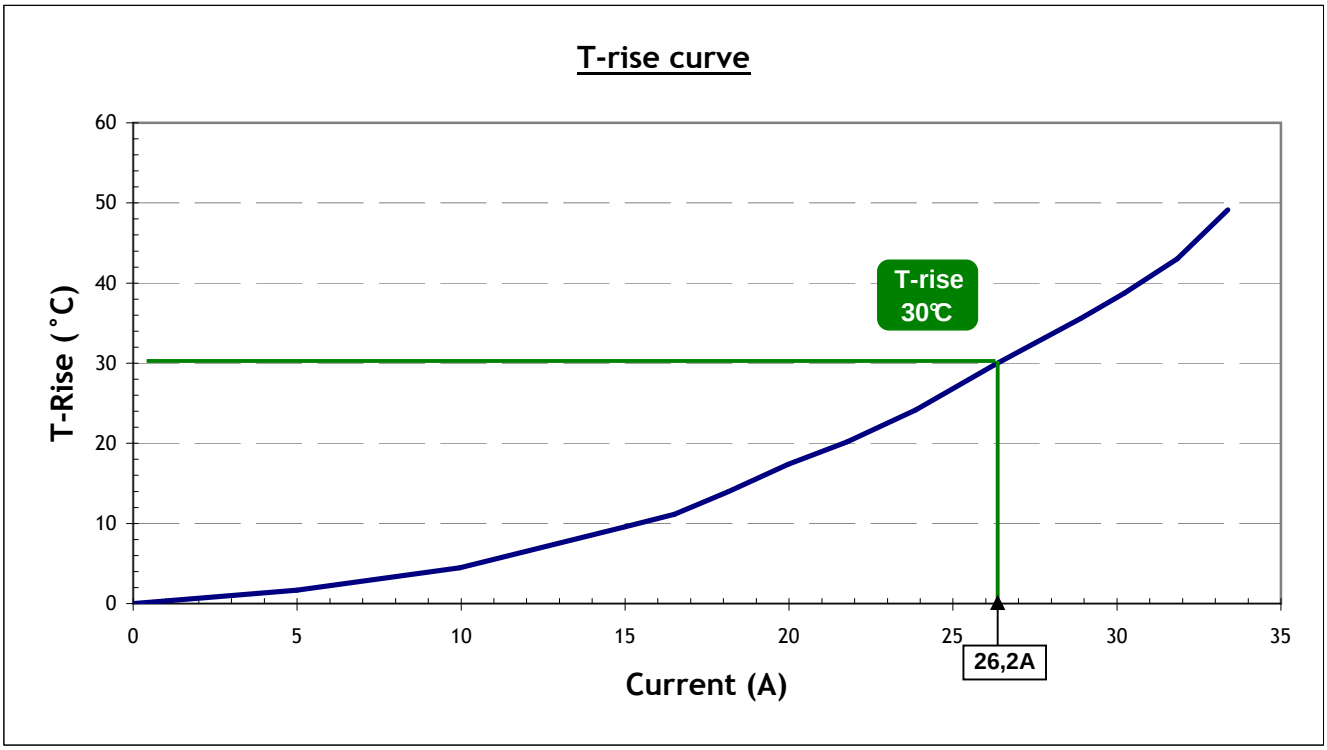
Results:

Brass alloy 260:

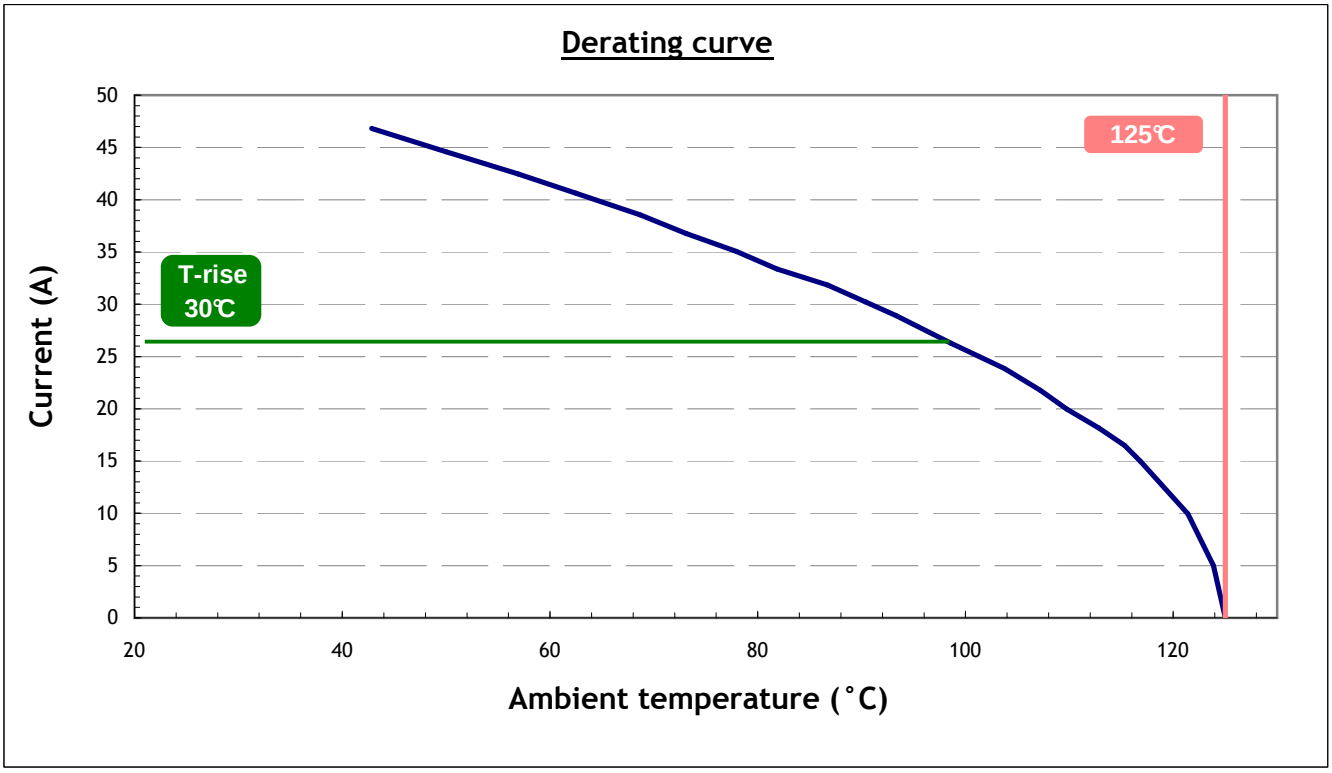
Table 1:

Samples	Current [A]												
	5,0	10,0	15,0	16,5	18,2	20,0	21,8	23,9	26,3	28,9	30,2	31,8	33,4
	ΔT [°C]												
241	1,3	3,5	7,8	9,3	11,7	14,7	17,2	20,6	25,6	30,8	33,7	37,5	42,4
242	1,4	3,9	8,6	10,1	12,6	15,7	18,4	21,9	27,2	32,6	35,7	39,4	45,1
243	1,2	3,7	8,3	9,7	12,2	15,2	17,9	21,3	26,7	32,1	35,2	38,5	43,9
244	1,4	4,1	8,9	10,4	13,0	16,3	19,0	22,7	28,0	33,5	36,5	40,7	45,6
245	1,1	3,5	8,2	9,7	12,3	15,4	18,0	21,6	26,8	32,0	35,0	39,3	44,2
246	1,1	3,6	8,1	9,6	12,2	15,3	17,9	21,3	26,4	31,7	34,8	38,3	43,2
247	1,0	3,3	7,8	9,3	11,7	14,8	17,3	20,5	25,5	30,7	33,6	36,8	40,8
248	1,1	3,7	8,6	10,2	12,8	16,0	18,6	22,2	27,5	33,1	35,8	39,5	44,9
249	0,8	3,0	7,3	8,7	10,9	13,8	16,1	19,3	24,1	29,0	31,7	35,1	39,4
250	1,1	3,6	8,3	9,8	12,3	15,3	17,8	21,1	26,2	31,3	34,2	37,8	42,3
Amb. Temp.	24,4	25,5	26,1	26,9	26,9	26,8	27,3	27,7	27,5	27,7	27,9	27,9	28,3
Min ΔT value	0,8	3,0	7,3	8,7	10,9	13,8	16,1	19,3	24,1	29,0	31,7	35,1	39,4
Average ($\overline{X}$)	1,1	3,6	8,2	9,7	12,2	15,2	17,8	21,3	26,4	31,7	34,6	38,3	43,2
Max ΔT value	1,4	4,1	8,9	10,4	13,0	16,3	19,0	22,7	28,0	33,5	36,5	40,7	45,6
Std Deviation (σ)	0,2	0,3	0,5	0,5	0,6	0,7	0,8	1,0	1,1	1,3	1,4	1,6	2,0
$\overline{X} + 3\sigma$	1,7	4,5	9,6	11,1	14,0	17,4	20,2	24,2	29,8	35,6	38,8	43,0	49,1

Brass alloy 260:



Graph 1 - Curve fit for 3σ upper tolerance temperature rise derived from table 1

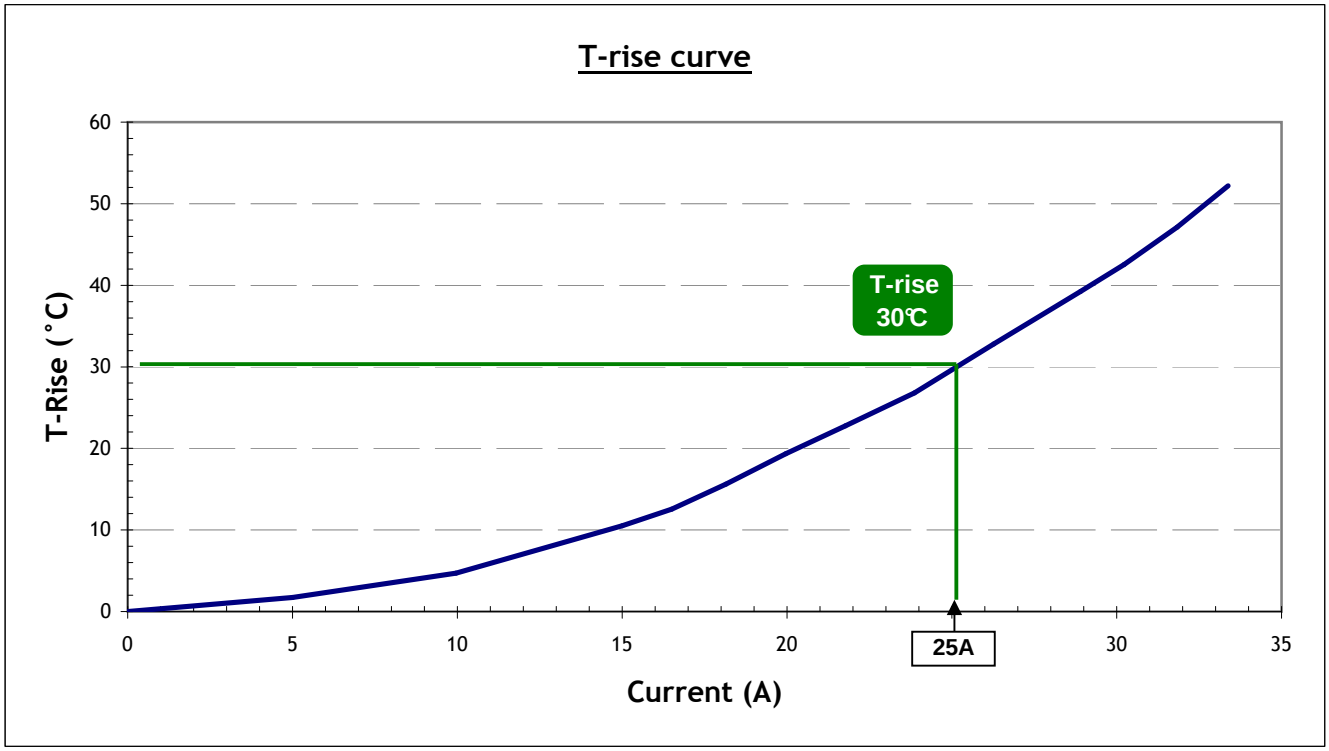


Graph 2 - Maximum operating temperature and temperature rise derived from table 1

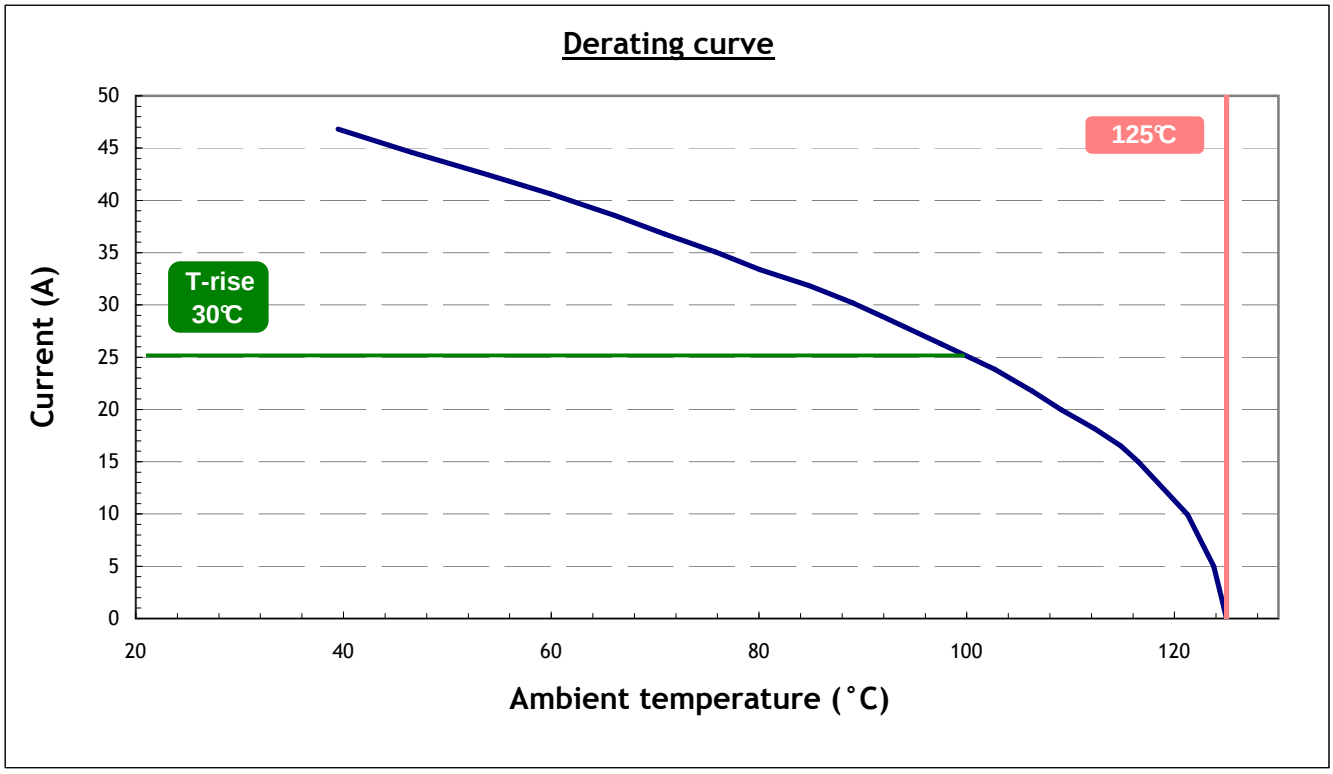
Brass alloy 268:

Table 2:

Samples	Current [A]												
	5,0	10,0	15,0	16,5	18,2	20,0	21,8	23,9	26,3	28,9	30,2	31,8	33,4
	ΔT [°C]												
251	1,0	3,8	8,9	10,8	13,4	16,9	19,8	23,6	28,9	35,0	38,0	42,3	47,0
252	1,3	4,2	9,8	11,8	14,7	18,3	21,6	25,5	31,2	37,4	40,5	45,1	49,6
253	1,1	3,5	8,2	9,9	12,5	15,6	18,5	22,0	26,8	32,5	35,1	39,5	43,7
254	1,3	3,8	8,6	10,4	13,0	16,2	19,1	22,8	28,0	33,6	36,7	41,0	45,9
255	1,1	3,5	8,0	9,6	12,0	15,0	17,8	21,2	26,0	31,4	34,2	38,2	42,7
256	1,3	3,8	8,4	10,0	12,5	15,5	18,3	21,7	26,4	32,0	34,7	38,9	43,0
257	1,1	3,3	7,6	9,1	11,6	14,6	17,1	20,6	25,4	30,8	33,6	37,7	42,1
258	1,5	4,3	9,0	10,6	13,1	16,4	19,3	23,0	28,5	34,3	37,2	41,0	46,6
259	1,1	3,4	7,8	9,2	11,4	14,5	17,1	20,6	25,9	31,2	33,9	37,6	42,9
260	1,4	3,9	8,6	10,2	12,7	15,9	18,7	22,4	27,7	33,1	36,5	40,3	45,6
Amb. Temp.	24,4	25,5	26,1	26,9	26,9	26,8	27,3	27,7	27,5	27,7	27,9	27,9	28,3
Min ΔT value	1,0	3,3	7,6	9,1	11,4	14,5	17,1	20,6	25,4	30,8	33,6	37,6	42,1
Average ($\overline{X}$)	1,2	3,7	8,5	10,2	12,7	15,9	18,7	22,3	27,5	33,1	36,0	40,2	44,9
Max ΔT value	1,5	4,3	9,8	11,8	14,7	18,3	21,6	25,5	31,2	37,4	40,5	45,1	49,6
Std Deviation (σ)	0,2	0,3	0,7	0,8	1,0	1,2	1,3	1,5	1,8	2,0	2,2	2,3	2,4
$\overline{X} + 3\sigma$	1,7	4,7	10,5	12,6	15,6	19,3	22,8	26,8	32,8	39,3	42,5	47,1	52,2



Graph 3 - Curve fit for 3σ upper tolerance temperature rise derived from table 2



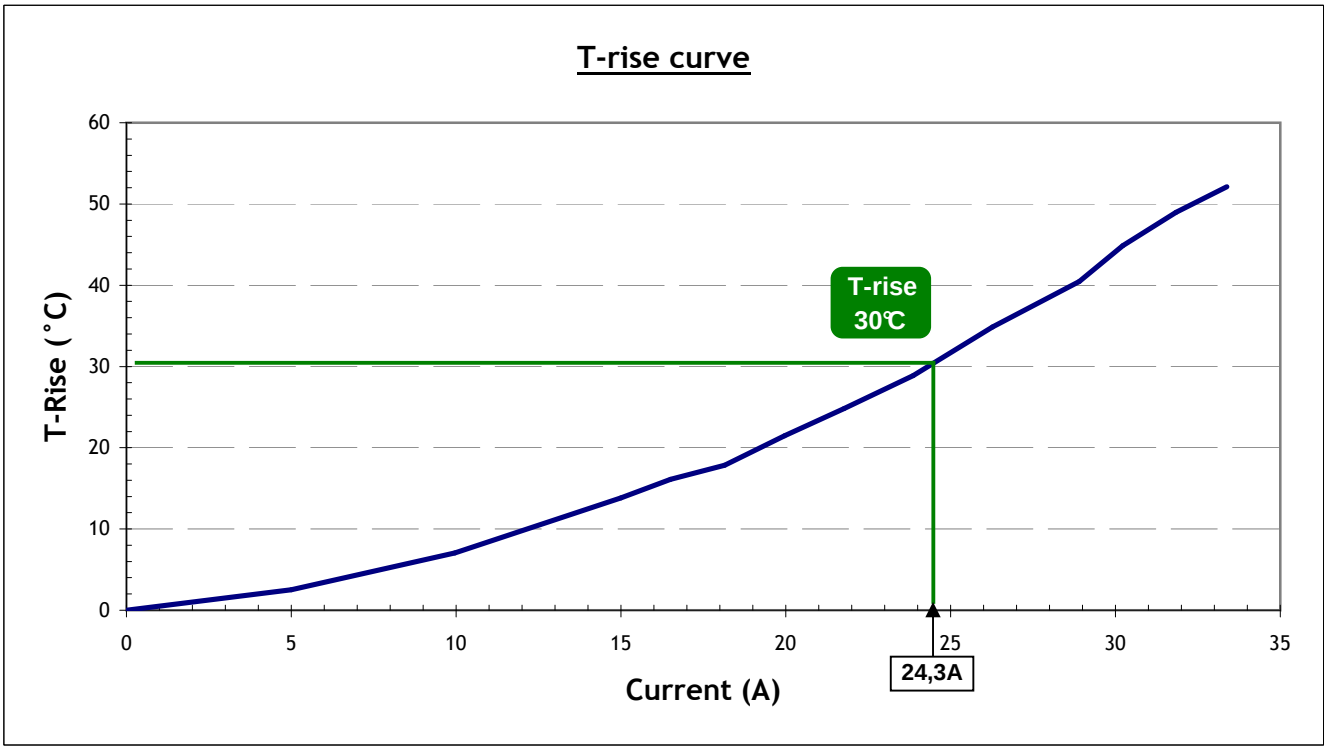
Graph 4 - Maximum operating temperature and temperature rise derived from table 2

Brass alloy 272:

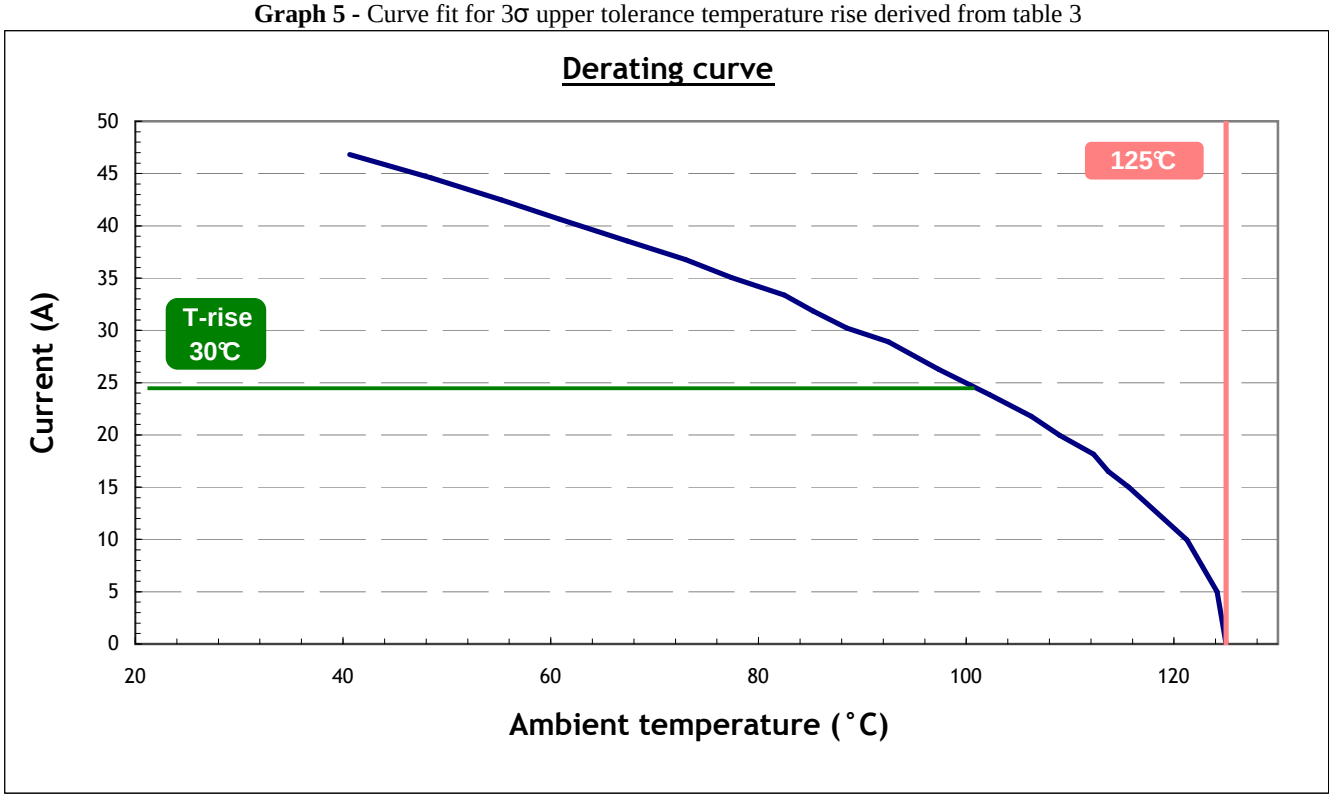
Table 3:

Samples	Current [A]												
	5,0	10,0	15,0	16,5	18,2	20,0	21,8	23,9	26,3	28,9	30,2	31,8	33,4
	ΔT [°C]												
261	0,9	3,8	9,2	11,1	12,3	15,4	18,2	22,0	26,7	31,5	35,8	38,7	41,5
262	2,2	6,4	12,8	14,9	16,5	19,8	22,8	26,5	31,8	36,8	41,0	44,3	46,9
263	0,9	3,6	9,1	10,9	12,3	15,4	18,0	22,0	26,4	30,9	35,0	37,8	40,4
264	0,4	2,3	7,3	9,1	10,4	13,4	15,8	19,8	24,3	28,7	32,6	35,4	37,9
265	0,1	3,5	9,3	11,3	12,8	16,3	19,0	23,0	28,2	33,1	36,9	40,2	43,3
266	0,4	2,7	7,7	9,4	10,7	13,7	16,1	19,9	24,2	28,6	32,2	35,2	37,5
267	0,9	4,1	10,0	12,1	13,7	17,2	20,0	24,3	29,6	34,9	38,9	42,8	45,8
268	0,6	3,3	8,8	10,8	12,2	15,5	18,2	22,4	27,2	32,5	36,3	39,6	42,6
269	1,0	4,0	9,7	11,8	13,2	16,6	19,3	23,4	28,4	33,4	37,5	40,8	43,8
270	1,0	3,9	9,8	11,8	13,6	16,8	20,0	24,2	29,7	34,7	38,8	42,7	45,4
Amb. Temp.	26,2	27,1	26,9	27,1	28,0	28,2	28,7	29,2	29,2	30,3	29,5	30,3	31,9
Min ΔT value	0,1	2,3	7,3	9,1	10,4	13,4	15,8	19,8	24,2	28,6	32,2	35,2	37,5
Average ($\overline{X}$)	0,8	3,8	9,4	11,3	12,8	16,0	18,7	22,8	27,7	32,5	36,5	39,8	42,5
Max ΔT value	2,2	6,4	12,8	14,9	16,5	19,8	22,8	26,5	31,8	36,8	41,0	44,3	46,9
Std Deviation (σ)	0,6	1,1	1,5	1,6	1,7	1,8	2,0	2,0	2,4	2,7	2,8	3,1	3,2
$\overline{X} + 3\sigma$	2,5	7,0	13,8	16,1	17,8	21,5	24,8	28,9	34,9	40,5	44,9	49,0	52,1

Brass alloy 272:



Graph 5 - Curve fit for 3σ upper tolerance temperature rise derived from table 3



Graph 6 - Maximum operating temperature and temperature rise derived from table 3

Conclusion:

ALLOY	Max. Current for 30℃ (ΔT)
260	26,2A
268	25,0A
272	24,3A

c. LOW LEVEL RESISTANCE

Specification, equipments and procedure:

See item "5a" on page 22.

Requirement:

Max. contact resistance = 3mΩ.

Results:

CONTACT RESISTANCE [mΩ]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	0,58	251	0,74	261	0,65
242	0,62	252	0,96	262	0,58
243	0,55	253	0,61	263	0,51
244	0,57	254	0,62	264	0,52
245	0,60	255	0,55	265	0,53
246	0,57	256	0,57	266	0,54
247	0,55	257	0,54	267	0,64
248	0,55	258	0,56	268	0,58
249	0,58	259	0,56	269	0,56
250	0,73	260	0,71	270	0,62
Minimum:	0,55	Minimum:	0,54	Minimum:	0,51
Average:	0,59	Average:	0,64	Average:	0,57
Maximum:	0,73	Maximum:	0,96	Maximum:	0,65

Conclusion: Pass.

d. CURRENT CYCLING

Specification:

UL-310 Par 12.

Equipment:

Digital power supply Agilent, model E3641, ref. TE 93-339036-019.
Data acquisition AGILENT, model 34972A, ref. TE 93-339048-872.
Digital power supply HP 6571 A, ref. TE 93-339036-021.

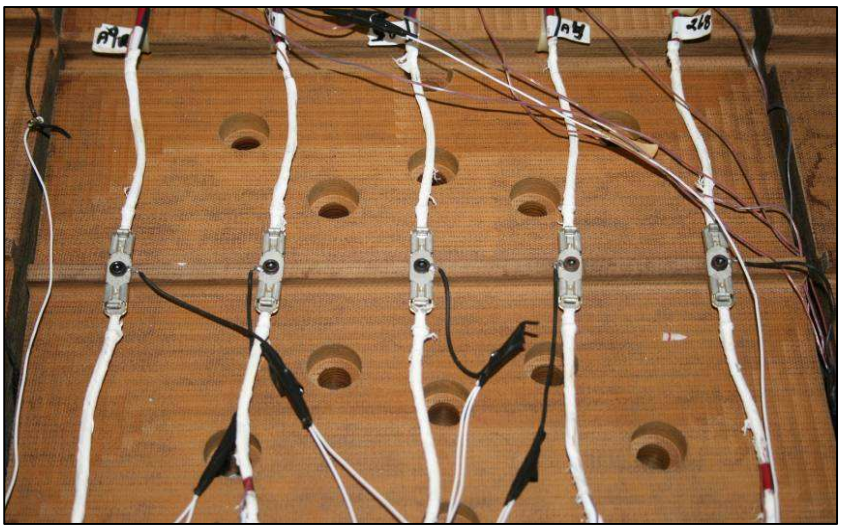
Procedure:

Samples shall be subjected to a 500 cycle test with a current as stated by TE Engineering Product (I=33,3Adc).
Each cycle shall consist of full current for 45 minutes, followed by a 15 minute period during which no current flows. The full current portion of the cycle, during which temperature measurements are made, could be extended to longer than 45 minutes, when necessary, to enable the connector to attain thermal stabilization.

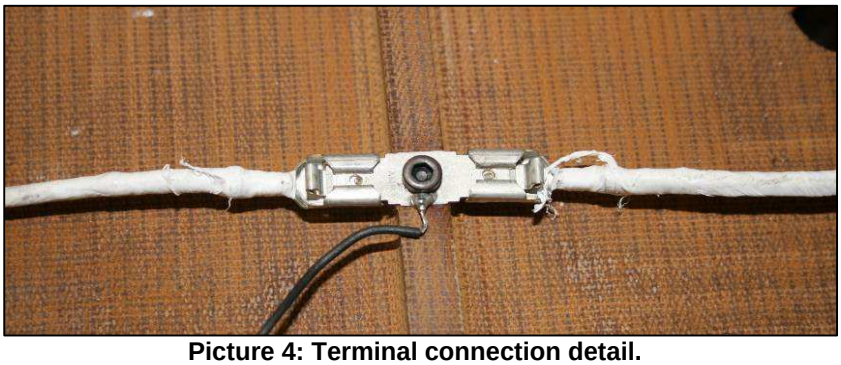
Requirement:

The temperature rise of a connector shall not exceed 30°C when the connector is continuously conducting the current as specified in UL310 - Table 12.1 (I=21,4A).
The temperature rise of a connector during the 500th cycle shall not be more than 15°C higher than the temperature rise during the 24th cycle, and any temperature rise shall not be more than 85°C.

Results:



Picture 3: Mounted circuit.



Picture 4: Terminal connection detail.

Cycle 1:

CONTACT RESISTANCE [mΩ]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	0,65	**251**	1,01	**261**	0,82
242	0,72	**252**	1,12	**262**	0,67
243	0,75	**253**	0,68	**263**	0,57
244	0,65	**254**	0,71	**264**	0,70
245	0,66	**255**	0,66	**265**	0,85
246	0,78	**256**	0,65	**266**	0,60
247	0,62	**257**	0,59	**267**	0,84
248	0,63	**258**	0,62	**268**	0,69
249	0,63	**259**	0,63	**269**	0,63
250	1,15	**260**	0,78	**270**	1,14
Minimum:	0,62	**Minimum:**	0,59	**Minimum:**	0,57
Average:	0,72	**Average:**	0,75	**Average:**	0,75
Maximum:	1,15	**Maximum:**	1,12	**Maximum:**	1,14

Cycle 500:

CONTACT RESISTANCE [mΩ]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	0,69	**251**	1,05	**261**	0,84
242	0,73	**252**	1,08	**262**	0,67
243	0,76	**253**	0,70	**263**	0,57
244	0,65	**254**	0,72	**264**	0,71
245	0,65	**255**	0,67	**265**	0,89
246	0,77	**256**	0,65	**266**	0,63
247	0,62	**257**	0,60	**267**	0,88
248	0,62	**258**	0,62	**268**	0,72
249	0,65	**259**	0,64	**269**	0,63
250	1,23	**260**	0,78	**270**	1,31
Minimum:	0,62	**Minimum:**	0,60	**Minimum:**	0,57
Average:	0,74	**Average:**	0,75	**Average:**	0,79
Maximum:	1,23	**Maximum:**	1,08	**Maximum:**	1,31

Cycle 24:

ΔT [ºC]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	37,38	251	50,49	261	47,95
242	40,31	252	51,18	262	46,59
243	42,83	253	41,26	263	39,25
244	40,56	254	42,78	264	42,41
245	39,78	255	40,45	265	45,75
246	42,62	256	39,93	266	37,63
247	38,49	257	38,15	267	45,94
248	40,03	258	40,34	268	43,33
249	36,37	259	40,04	269	43,08
250	49,21	260	43,21	270	52,12
Minimum:	36,37	Minimum:	38,15	Minimum:	37,63
Average:	40,76	Average:	42,78	Average:	44,40
Maximum:	49,21	Maximum:	51,18	Maximum:	52,12

Cycle 500:

ΔT [ºC]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	43,31	251	52,01	261	52,51
242	46,17	252	50,51	262	44,88
243	48,71	253	42,28	263	44,78
244	46,13	254	43,52	264	47,54
245	44,23	255	41,29	265	51,72
246	47,19	256	40,93	266	44,80
247	43,26	257	39,29	267	51,36
248	45,24	258	41,13	268	48,74
249	42,78	259	40,45	269	48,30
250	58,13	260	44,00	270	55,22
Minimum:	42,78	Minimum:	39,29	Minimum:	44,78
Average:	46,51	Average:	43,54	Average:	48,99
Maximum:	58,13	Maximum:	52,01	Maximum:	55,22

Conclusion:
Pass.

e. LOW LEVEL RESISTANCE
Specification, equipments and procedure:
See item "5a" on page 22.

Requirement:
Max. contact resistance = 3mΩ.

Results:

CONTACT RESISTANCE [mΩ]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	0,62	**251**	0,70	**261**	0,74
242	0,65	**252**	0,92	**262**	0,60
243	0,67	**253**	0,63	**263**	0,52
244	0,58	**254**	0,64	**264**	0,65
245	0,58	**255**	0,60	**265**	0,78
246	0,69	**256**	0,58	**266**	0,56
247	0,56	**257**	0,54	**267**	0,78
248	0,56	**258**	0,56	**268**	0,63
249	0,60	**259**	0,58	**269**	0,56
250	1,08	**260**	0,70	**270**	1,11
Minimum:	0,56	**Minimum:**	0,54	**Minimum:**	0,52
Average:	0,66	**Average:**	0,65	**Average:**	0,69
Maximum:	1,08	**Maximum:**	0,92	**Maximum:**	1,11

Conclusion: Pass.

f. TEMPERATURE / HUMIDITY CYCLING

Specification, equipments and procedure:

See item "2a" on page 9.

Specified value:

Only conditioning.

g. LOW LEVEL RESISTANCE

Specification, equipments and procedure:

See item "5a" on page 22.

Requirement:

Max. contact resistance = 3mΩ.

Results:

CONTACT RESISTANCE [mΩ]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	0,71	251	0,85	261	0,87
242	0,70	252	1,13	262	0,78
243	0,84	253	0,79	263	0,58
244	0,68	254	0,88	264	0,80
245	0,72	255	0,76	265	0,98
246	0,78	256	0,68	266	0,60
247	0,66	257	0,69	267	0,81
248	0,69	258	0,74	268	0,70
249	0,72	259	0,85	269	0,58
250	1,13	260	0,92	270	1,14
Minimum:	0,66	Minimum:	0,68	Minimum:	0,58
Average:	0,76	Average:	0,83	Average:	0,78
Maximum:	1,13	Maximum:	1,13	Maximum:	1,14

Conclusion: Pass.

h. TEMPERATURE LIFE

Specification, equipments, procedure:

See item "2b" on page 9.

Specified value:

Only conditioning.

i. LOW LEVEL RESISTANCE

Specification, equipments and procedure:

See item "5a" on page 22.

Requirement:

Max. contact resistance = 3mΩ.

Results:

CONTACT RESISTANCE [mΩ]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	0,78	251	0,93	261	0,86
242	0,71	252	1,28	262	0,80
243	0,89	253	0,79	263	0,58
244	0,72	254	0,83	264	0,86
245	0,73	255	0,78	265	1,02
246	0,86	256	0,70	266	0,62
247	0,74	257	0,71	267	0,88
248	0,73	258	0,86	268	0,73
249	0,78	259	0,83	269	0,59
250	1,21	260	0,93	270	1,27
Minimum:	0,71	Minimum:	0,70	Minimum:	0,58
Average:	0,82	Average:	0,86	Average:	0,82
Maximum:	1,21	Maximum:	1,28	Maximum:	1,27

Conclusion: Pass.

j. THERMAL SHOCK

Specification, equipments and procedure:

See item "2c" on page 10.

Specified value:

Only conditioning.

k. LOW LEVEL RESISTANCE

Specification, equipments and procedure:

See item "5a" on page 22.

Requirement:

Max. contact resistance = 3mΩ.

Results:

CONTACT RESISTANCE [mΩ]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	0,81	251	0,93	261	0,99
242	0,71	252	1,74	262	0,75
243	0,85	253	0,93	263	0,67
244	0,74	254	1,01	264	0,88
245	0,67	255	1,09	265	1,08
246	1,00	256	0,75	266	0,62
247	0,79	257	0,70	267	0,96
248	0,87	258	0,88	268	0,74
249	0,80	259	1,28	269	0,71
250	1,23	260	1,02	270	1,31
Minimum:	0,67	Minimum:	0,70	Minimum:	0,62
Average:	0,85	Average:	1,03	Average:	0,87
Maximum:	1,23	Maximum:	1,74	Maximum:	1,31

Conclusion: Pass.

l. VIBRATION

Specification:

EIA 364-28D Test Condition 2.

Execution:

Test accomplished at external Laboratory. See Federal Mogul test report Nr. 8612 annex.

m. LOW LEVEL RESISTANCE

Specification, equipments and procedure:

See item "5a" on page 22.

Requirement:

Max. contact resistance = 3mΩ.

Results:

CONTACT RESISTANCE [mΩ]					
SAMPLE	BRASS ALLOY 260	SAMPLE	BRASS ALLOY 268	SAMPLE	BRASS ALLOY 272
241	0,82	251	1,01	261	0,91
242	0,86	252	1,66	262	0,90
243	1,36	253	2,02	263	1,26
244	0,90	254	1,06	264	1,04
245	1,18	255	1,21	265	1,44
246	1,53	256	0,81	266	0,68
247	1,63	257	0,89	267	1,45
248	0,88	258	1,18	268	0,75
249	1,08	259	1,96	269	0,96
250	1,50	260	0,95	270	1,38
Minimum:	0,82	Minimum:	0,81	Minimum:	0,68
Average:	1,17	Average:	1,28	Average:	1,08
Maximum:	1,63	Maximum:	2,02	Maximum:	1,45

Conclusion: Pass.

n. FINAL TEMPERATURE RISE X CURRENT

Specification, equipments, procedure:

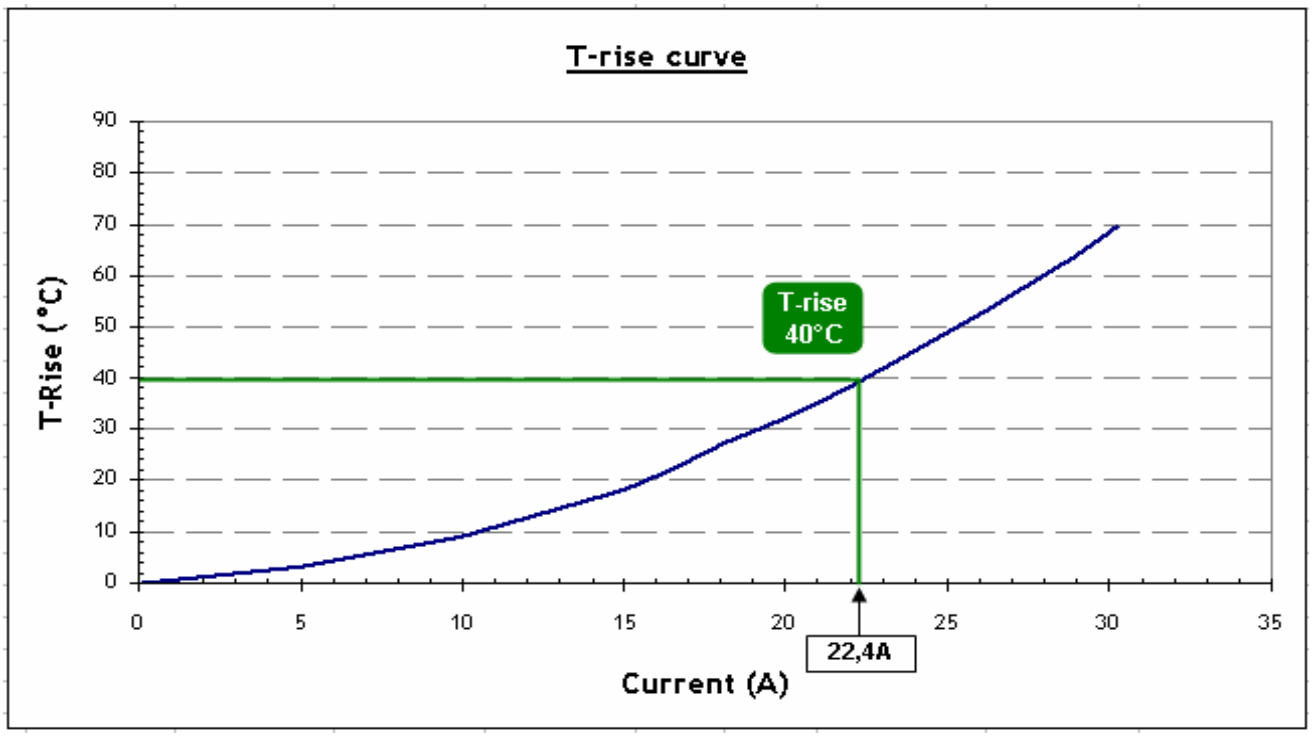
See item "5b" on page 23.

Results:

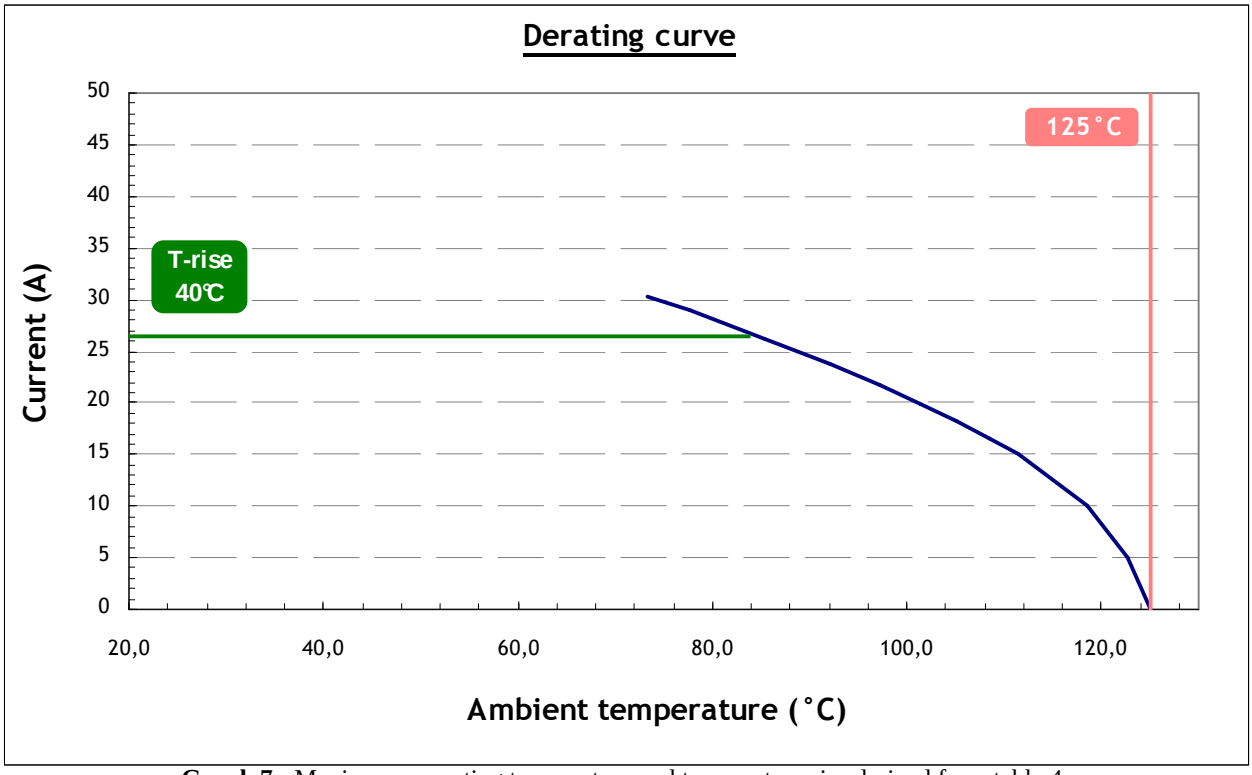
Brass alloy 260:

Table 4:

Samples	Current [A]										
	5,0	10,0	15,0	16,5	18,2	20,0	21,8	23,9	26,3	28,9	30,2
	ΔT [°C]										
241	2,0	5,8	11,7	14,2	17,2	20,3	23,9	28,6	35,5	42,8	46,4
242	1,9	5,3	10,8	13,0	15,7	18,6	21,9	26,1	31,5	37,9	41,3
243	2,6	7,4	15,2	18,7	22,5	26,3	31,1	37,1	44,4	53,0	57,4
244	2,1	5,8	12,1	14,9	18,2	21,5	25,1	29,8	35,8	43,0	47,1
245	2,6	7,2	14,6	17,9	21,8	25,8	30,0	35,4	42,3	50,8	55,1
246	2,6	7,4	15,2	19,0	23,0	27,0	31,8	37,8	45,5	54,3	59,5
247	2,4	6,8	13,7	16,8	20,2	24,2	28,4	33,3	40,0	47,6	52,0
248	1,4	5,6	13,5	16,8	19,8	23,9	27,2	32,6	39,1	46,4	50,7
249	2,4	6,6	13,2	15,8	18,9	22,7	26,5	31,7	37,4	45,1	48,8
250	2,6	7,4	15,2	18,0	22,0	26,3	31,0	37,3	44,7	53,5	58,3
Amb. Temp.	24,6	24,8	25,1	25,1	25,2	25,3	25,5	25,4	25,6	25,7	25,7
Min ΔT value	1,4	5,3	10,8	13,0	15,7	18,6	21,9	26,1	31,5	37,9	41,3
Average ($\overline{X}$)	2,3	6,5	13,5	16,5	19,9	23,7	27,7	33,0	39,6	47,4	51,7
Max ΔT value	2,6	7,4	15,2	19,0	23,0	27,0	31,8	37,8	45,5	54,3	59,5
Std Deviation (σ)	0,4	0,8	1,6	2,0	2,4	2,9	3,4	4,0	4,6	5,4	5,9
$\overline{X} + 3\sigma$	3,4	9,0	18,2	22,5	27,3	32,2	37,8	44,9	53,5	63,7	69,5



Graph 6 - Curve fit for 3σ upper tolerance temperature rise derived from table 4

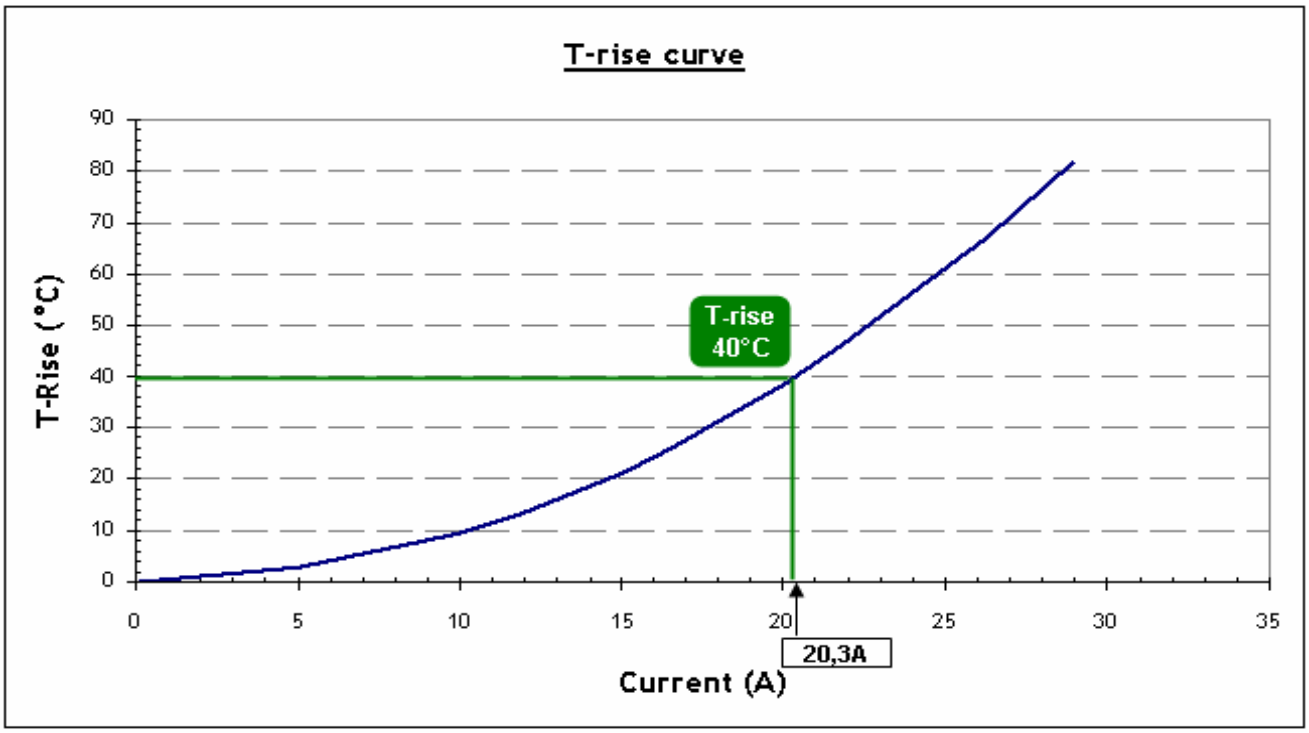


Graph 7 - Maximum operating temperature and temperature rise derived from table 4

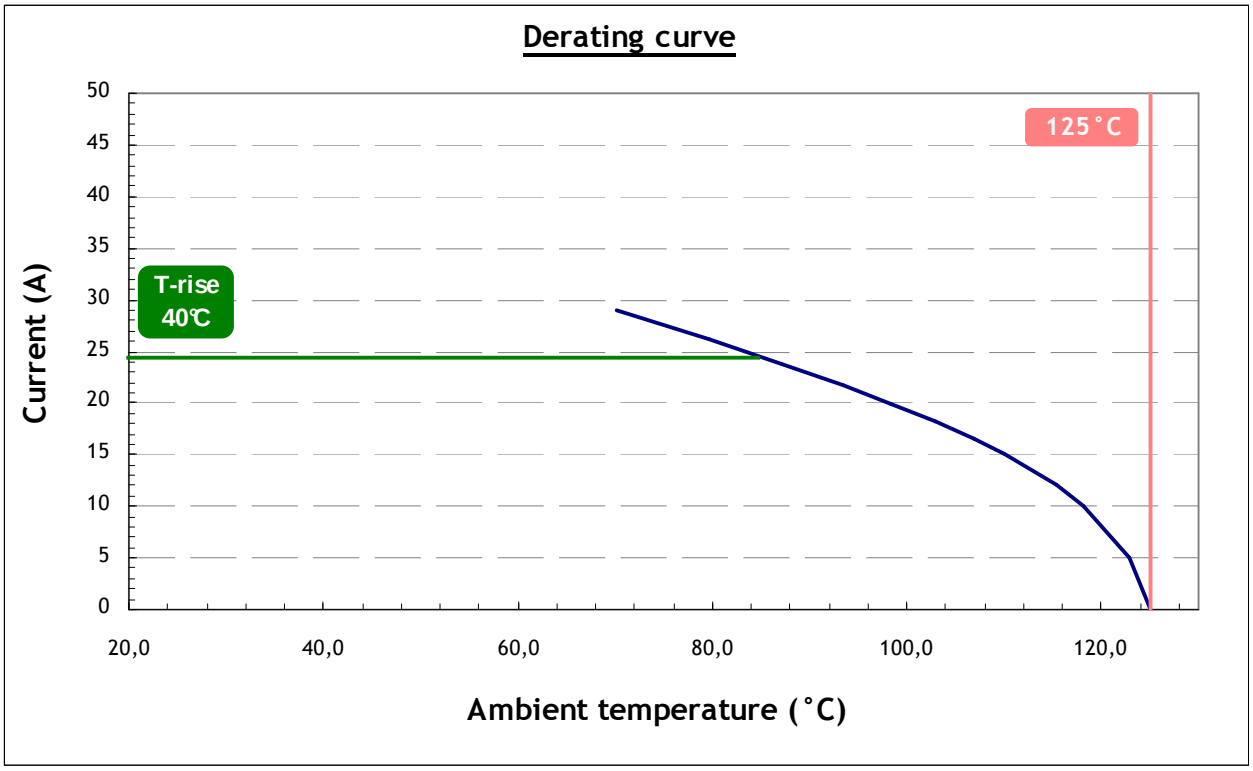
Brass alloy 268:

Table 5:

Samples	Current [A]										
	5,0	10,0	12,0	15,0	16,5	18,2	20,0	21,8	23,9	26,3	28,9
	ΔT [°C]										
251	1,6	5,9	8,4	13,3	16,1	19,5	23,5	27,6	32,7	39,6	47,0
252	2,2	7,6	10,8	16,6	20,2	24,3	29,1	34,4	40,9	49,4	59,2
253	2,5	8,6	12,2	18,7	22,5	27,1	32,7	38,7	47,0	54,9	66,8
254	2,3	7,2	10,3	15,9	19,2	23,3	28,0	33,3	39,7	48,1	58,0
255	1,9	6,1	8,6	13,3	16,0	19,3	23,2	27,4	32,6	39,1	47,5
256	2,0	5,9	8,3	12,6	15,1	18,2	21,9	25,9	30,8	36,6	44,1
257	1,8	6,2	8,9	13,7	16,5	19,9	24,1	28,5	34,2	41,1	49,9
258	2,1	6,4	9,0	13,7	16,5	19,8	23,5	28,0	33,3	39,6	47,8
259	2,3	7,6	10,9	17,2	21,4	26,9	32,8	39,6	47,8	57,4	70,3
260	2,2	6,9	9,8	14,9	18,4	22,5	27,2	32,6	39,0	47,0	57,4
Amb. Temp.	24,6	24,8	25,1	25,1	25,2	25,3	25,5	25,4	25,6	25,7	25,7
Min ΔT value	1,6	5,9	8,3	12,6	15,1	18,2	21,9	25,9	30,8	36,6	44,1
Average ($\overline{X}$)	2,1	6,8	9,7	15,0	18,2	22,1	26,6	31,6	37,8	45,3	54,8
Max ΔT value	2,5	8,6	12,2	18,7	22,5	27,1	32,8	39,6	47,8	57,4	70,3
Std Deviation (σ)	0,3	0,9	1,3	2,0	2,5	3,2	4,0	4,9	6,1	7,2	9,0
$\overline{X} + 3\sigma$	2,8	9,5	13,6	21,1	25,8	31,8	38,6	46,2	56,1	66,8	81,7



Graph 8 - Curve fit for 3σ upper tolerance temperature rise derived from table 5

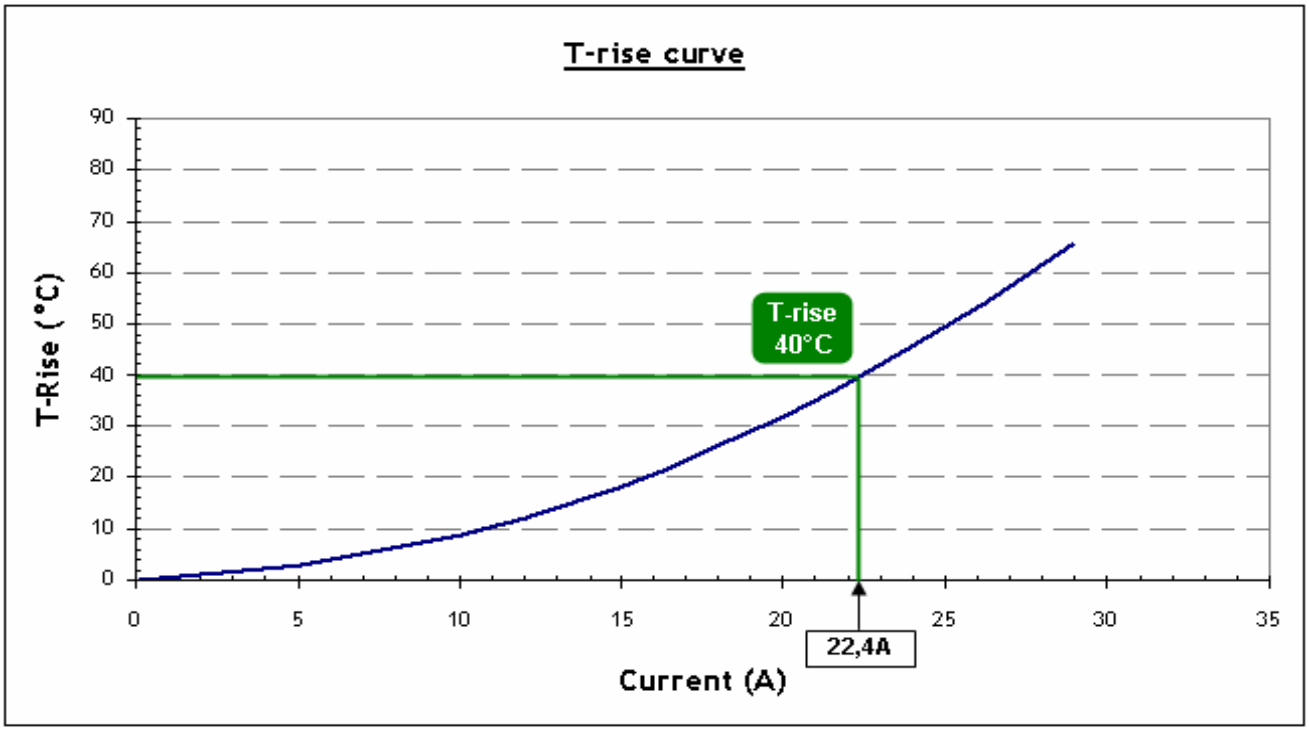


Graph 9 - Maximum operating temperature and temperature rise derived from table 5

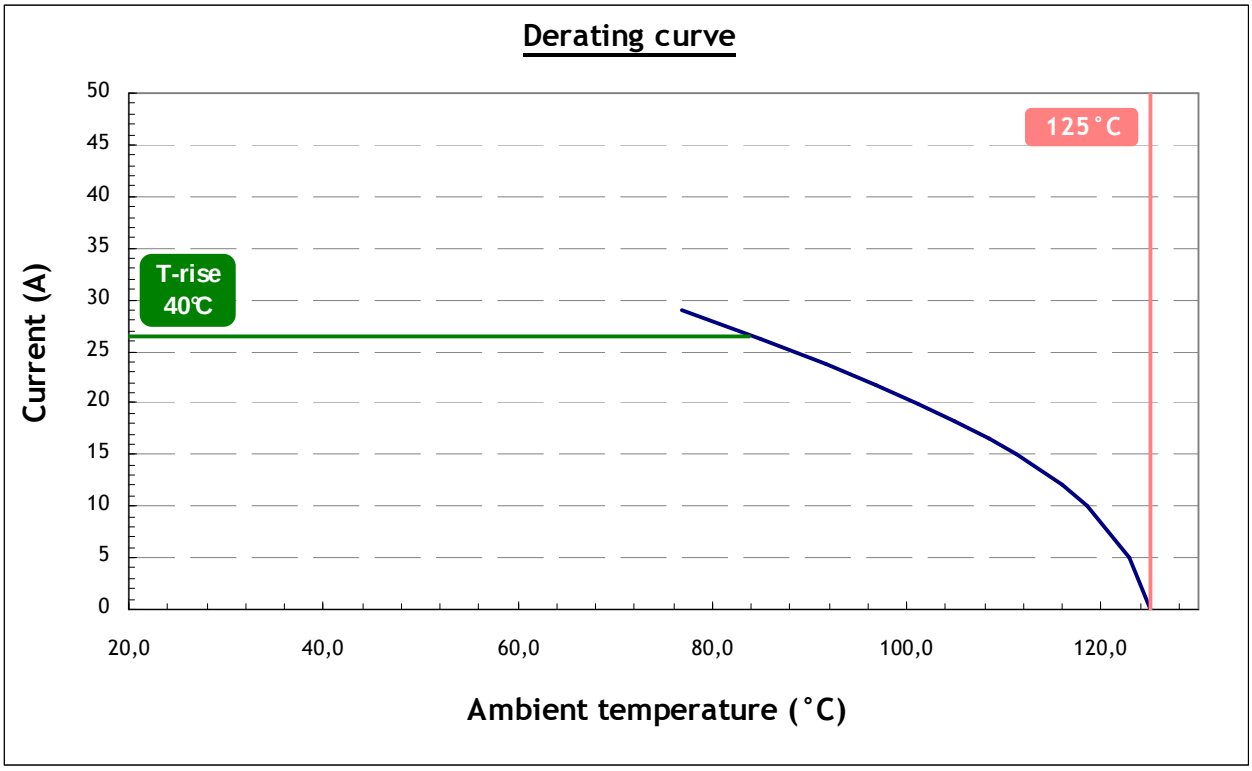
Brass alloy 272:

Table 6:

Samples	Current [A]										
	5,0	10,0	12,0	15,0	16,5	18,2	20,0	21,8	23,9	26,3	28,9
	ΔT [°C]										
261	2,1	6,2	8,5	12,9	15,6	18,7	22,1	26,0	30,2	36,0	43,0
262	2,0	5,7	7,9	12,1	14,7	17,7	20,8	24,7	28,7	34,6	41,2
263	2,4	6,9	9,5	14,3	17,1	20,7	24,9	29,4	34,2	41,4	49,2
264	2,4	7,0	9,7	14,8	17,7	21,4	25,6	30,1	35,8	42,9	52,3
265	2,6	7,9	11,0	16,7	19,8	24,0	28,8	34,1	40,7	48,6	58,0
266	2,0	5,9	8,3	12,7	15,5	18,8	22,5	26,7	31,4	37,9	45,3
267	2,4	7,4	10,2	15,6	18,9	22,8	26,9	32,0	38,3	46,0	55,9
268	1,9	5,5	7,8	12,0	14,4	17,4	21,0	24,8	29,6	35,3	43,0
269	2,0	6,1	8,4	12,8	15,5	18,6	22,1	26,2	31,1	37,2	44,7
270	2,0	6,4	8,9	13,7	16,6	20,0	23,8	28,3	33,9	40,8	49,3
Amb. Temp.	24,6	24,8	25,1	25,1	25,2	25,3	25,5	25,4	25,6	25,7	25,7
Min ΔT value	1,9	5,5	7,8	12,0	14,4	17,4	20,8	24,7	28,7	34,6	41,2
Average ($\overline{X}$)	2,2	6,5	9,0	13,8	16,6	20,0	23,9	28,2	33,4	40,1	48,2
Max ΔT value	2,6	7,9	11,0	16,7	19,8	24,0	28,8	34,1	40,7	48,6	58,0
Std Deviation (σ)	0,2	0,8	1,0	1,6	1,8	2,2	2,6	3,1	3,9	4,7	5,8
$\overline{X} + 3\sigma$	2,9	8,7	12,2	18,4	21,9	26,6	31,8	37,7	45,2	54,2	65,5



Graph 10 - Curve fit for 3σ upper tolerance temperature rise derived from table 6



Graph 11 - Maximum operating temperature and temperature rise derived from table 6

Conclusion:

ALLOY	Max. Current for 40℃ ΔT
260	22,4A
268	20,3A
272	22,4A

o. LOW LEVEL RESISTANCE

Specification, equipments and procedure:

See item "5a" on page 22.

Requirement:

Max. contact resistance = 3mΩ.

Results:

CONTACT RESISTANCE [mΩ]					
SAMPLE	**BRASS ALLOY 260**	**SAMPLE**	**BRASS ALLOY 268**	**SAMPLE**	**BRASS ALLOY 272**
241	0,86	**251**	1,16	**261**	1,04
242	0,76	**252**	1,92	**262**	0,90
243	1,52	**253**	2,17	**263**	1,99
244	0,86	**254**	1,12	**264**	1,37
245	1,20	**255**	1,36	**265**	1,86
246	1,50	**256**	0,88	**266**	0,73
247	1,32	**257**	2,01	**267**	1,52
248	0,89	**258**	1,57	**268**	0,79
249	1,13	**259**	1,97	**269**	0,84
250	1,64	**260**	0,96	**270**	1,45
Minimum:	0,76	**Minimum:**	0,88	**Minimum:**	0,73
Average:	1,17	**Average:**	1,51	**Average:**	1,25
Maximum:	1,64	**Maximum:**	2,17	**Maximum:**	1,99

Conclusion: Pass.