Job Number:	Project Number:	Date of issue:
E05.03.15	R03.037	May 2005

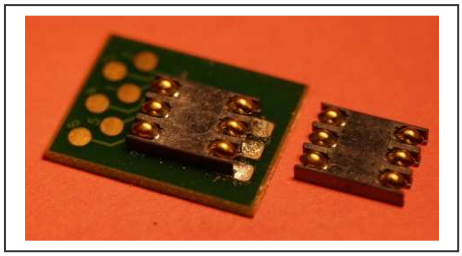
Description:

SIM 5D

Product Qualification

Part numbers:
1-1705300-8
6-1705300-6

Scope:
To test the SIM 5D connector according the qualification procedure as described in Design Objectives 108-19280.



Conclusions:
All tested specimens meet the requirements of Design Objectives 108-19280.

Test Specification: Design Objectives 108-19280.

Test Carried Out:
1 Qualification.
2
3

Distribution:
1 W. Jansen
2 Doc. center
3 File Lab.

Test Engineer: D. Jooren	**Requested by:** Product Engineering	
Laboratory Manager: D.M.J. Jooren.	**Classification:** Unrestricted	
Disposal of Samples: Destroyed	**Report Number:** 501-19095	**Rev. A**
Appendices:	**Page 1 of 12 Pages**	

SAMPLE DESCRIPTION

For each of the 8 testgroups, 5 SIM connectors were available. For testgroup 2 there were 5 additional SIM connectors available, to enable both 'front slide' and 'side slide' insertion. During the testsequence, immediately after the initial visual examination, the connectors were soldered on printed circuit boards. As counterparts, dummy SIM-cards were used.

TEST PROCEDURES

IEC 60512-1-1:
Test 1a

VISUAL EXAMINATION
The test samples were visually inspected under a stereomicroscope, at a 10x magnification, with suitable illumination.

IEC 60512-2-1:
Test 2a

CONTACT RESISTANCE:
The termination resistance was measured with an open circuit voltage of 20 mVolt and a maximum current of 100 mA DC.
For measuring points see figure 1. Each measuring value represents 2 connections from the SIM connector to the SIM-card, and includes the bulk resistance of the PCB paths.
Note: due to the PCB layout, different contact pairs have different quantities of bulk resistance.

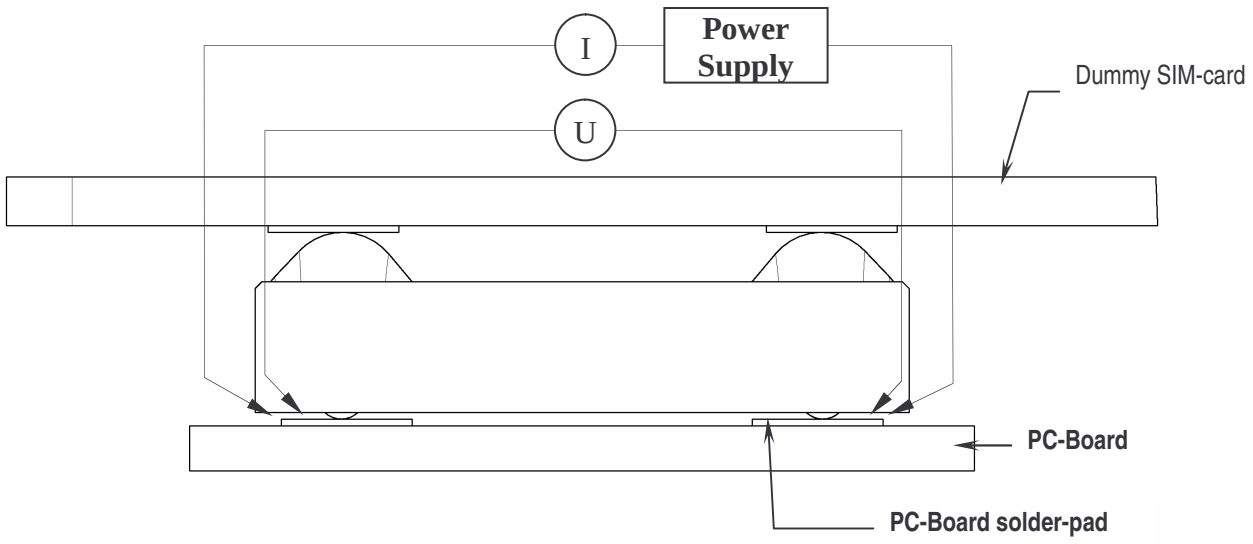


Fig 1.

IEC 60512-3-1:
Test 3a

INSULATION RESISTANCE:
This measurement was done with a programmable electrometer. The measuring voltage was 100 Volt during one minute.

IEC 60512-4-4:
Test 4a

VOLTAGE PROOF:
This measurement was done with a high voltage tester. The test duration was one minute at 200 V_{AC}.

IEC 60512-9-5:
Test 9e

CURRENT LOAD CYCLIC:
All test samples in series were charged with a current of 0.5 A,
which is 125% of the maximum current as specified in the detail specification.
Current ON : 45 minutes.
Current OFF : 15 minutes.
Number of cycles : 500.

IEC 60512-6-4:
Test 6d

VIBRATION:
The samples were mounted on a vibration table.
The frequency from 10-500-10 Hz was traversed with one octave per minute.
Below the cross-over frequency the samples were vibrated with an amplitude of 0.75 mm, above that frequency with an acceleration of 10 g. The duration was 1 hour in each of the three mutually perpendicular directions. The samples were provided with a circuit to detect interruptions of continuity longer than 1 micro-second.

IEC 60068-2-36:
Test Fdb

RANDOM VIBRATION:
The samples, mounted on a vibration table, were vibrated with an ASD of 0.01 g^2/Hz for the frequency range 5-20 Hz, and with -3 dB/oct for the frequency range 20-500 Hz in each of 3 mutually perpendicular directions during 30 minutes per axis. During this vibration test the samples were connected to a discontinuity tester to detect contact interruptions longer than 1 micro-second.

CONTACT NORMAL FORCE:
The contacts were mounted on a normal force tester. During the press-in operation, the contact normal force vs. deflection curve was measured.

IEC 60512-9-1:
Test 9a

MECHANICAL OPERATION (enduration):
The samples were mated and unmated for 5000 times at a speed of 10 mm/s.
The mating direction was horizontal, sliding a SIM card over the contacts. At one lot, this was done with the card coming from the front, at another lot the card was mated from the side.

IEC 60512-6-3:
Test 6c

SHOCK TEST:
Acceleration 100g, half sinewave pulses of 8.5 msec.
3 shocks in both directions of each of three mutually perpendicular axes were executed.
The samples were provided with a circuit to detect interruptions of continuity longer than 1 micro-second.

IEC 60512-11-12:
Test 11m

DAMP HEAT CYCLIC:
The samples were subjected to a cyclic damp heat test under the following conditions:
Upper temperature : 40°C.
Lower temperature : 25°C.
Relative humidity : 95%.
Condition : unmated.
Number of cycles : 10.

IEC 512-6-11i:

DRY HEAT:

The samples were subjected to a dry heat test under the following conditions:
Temperature : 85°C.
Condition : unmated.
Duration : 500 hours.

IEC 60068-2-20, Test Ta, method 1

SOLDERABILITY (method 1):

The samples were subjected to a dry heat test under the following conditions:
Temperature: :155°C.
Duration: :16 hours.
After that, the samples were plunged in a solder bath with a temperature of 215°C during 3 seconds.

EIA-J RX-0102/102, Par. 3.3.4.

RESISTANCE TO SOLDERING HEAT (method 1a):

The samples were 3 times subjected to an IR reflow soldering curve, see curve in figure 2. The temperatures and durations are given in the table below.

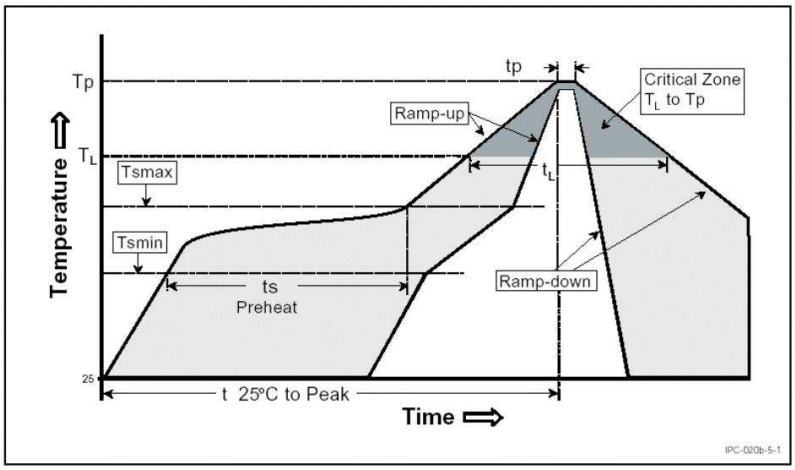


fig 2.

Profile feature	**Pb-Free Assembly** **Small Body**
Average ramp-up rate (T_L to T_P)	3°C /second max.
Preheat - Temperature Min ($T_{S\ min}$) - Temperature Max ($T_{S\ max}$) - Time (min to max) (t_S)	 150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L - Ramp-up Rate	 3°C /second max.
Preheat - Temperature Min (T_L) - Time (t_L)	 217°C 60-150 seconds
Peak temperature (T_P)	260 +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6°C /second max.
Time 25°C to Peak Temperature	8 minutes max.

Note: All temperatures refer to the topside of the package, measured on the package body surface.

IEC 60512-11-4:
Test 11e

RAPID CHANGE OF TEMPERATURE:
The samples were subjected to a rapid change of temperature test with the following parameters:
One cycle consists of:
Upper temperature : 85°C for 30 minutes.
Lower temperature : -40°C for 30 minutes.
Condition : unmated.
Number of cycles : 100

IEC 60512-11-6:
Test 11f

SALT MIST:
The samples were placed in a salt spray chamber during 48 hours with a salt mist produced of a 5% salt solution, at a temperature of 35°C.

NF S 80-77:

ARTIFICIAL PERSPIRATION:
Cottons moistened with artificial perspiration were placed near/on the contacts and this whole was placed in an oven with a temperature of 55°C during 24 hrs.
The artificial perspiration consists of:
- distilled water (85%)
- Sodium chloride (10%)
- Lactic acid (5%)

MIL-STD 810E TM510.3

DUST TEST:
The samples were subjected to a three-step dust test, see the table below for the dust concentration.

Step number	Temperature °C	Dust concentration grams/cubic meter	Air velocity meters/second	Duration hours
1	23	10,5	8,9	6
2	63	0	1,53	16
3	23	10,5	8,9	6

TEST SEQUENCE

Testgroup 1

- Examination of product
- Resistance to soldering heat
- Termination resistance, initial
- Vibration (sinusoidal)
- Vibration (random)
- Physical shock
- Termination resistance, final
- Examination of product

Testgroup 2

- Examination of product
- Resistance to soldering heat
- Contact normal force
- Termination resistance, initial
- Mechanical operation
- Damp/heat, cyclic
- Heat age
- Contact normal force
- Termination resistance, final
- Examination of product

Testgroup 3

- Examination of product
- Resistance to soldering heat
- Insulation resistance
- Voltage proof
- Rapid change of temperature
- Damp/heat, cyclic
- Insulation resistance
- Voltage proof
- Examination of product

Testgroup 4

- Examination of product
- Resistance to soldering heat
- Termination resistance, initial
- Current cycling
- Termination resistance, final
- Examination of product

Testgroup 5

- Examination of product
- Solderability
- Examination of product

Testgroup 6

- Examination of product
- Resistance to soldering heat
- Termination resistance, initial
- Salt mist
- Termination resistance, final
- Examination of product

Testgroup 7

- Examination of product
- Resistance to soldering heat
- Termination resistance, initial
- Artificial perspiration
- Termination resistance, final
- Examination of product

Testgroup 8

- Examination of product
- Resistance to soldering heat
- Termination resistance, initial
- Dust test
- Termination resistance, final
- Examination of product

EQUIPMENT USED

Equipment	Producer	Type	Series Nb	Cal. Due
Micro-ohmmeter	Keithley	580	477870	12-05.
Electrometer	Keithley	617	325475	02-06.
High voltage tester	Sefelec	PR-12-NN	264	11-05.
Current source	Delta	SM 7020	01422	
Vibration control	DataPhysics 3788			
Vibrator	Ling+B&K	PA2000	S1165-002	
Accelero meter	MMF	ks 94-01	723	01-06
Climatic chamber	Weiss	125SBDU70	222/14800	01-06
Climatic chamber	Weiss	80-200DU-ST	224/17413	01-06
Oven	Heraeus	UT6060	9102050	01-06.
Saltmist chamber	Weiss	S450SSC	264347	01-06.
Infrared system	Dima	SMRO-0252	972127	02-06.
Dust chamber	PTL	P14.18	9702049	

TESTRESULTS

Termination resistance measuring values.
Testgroups 1, 4 and 6:

All values represented in milli-Ohms.

Product name:

Column.	Group	Lot	Test
-1-:	1	1-5	initial
-2-:	1	1-5	final
-3-:	4	1-5	initial
-4-:	4	1-5	final
-5-:	6	1-5	initial
-6-:	6	1-5	final

	-1-	*-2-*	*-3-*	*-4-*	*-5-*	*-6-*
1	62.33	61.78	58.25	59.68	62.33	64.35
2	41.18	40.54	42.55	43.31	40.18	43.42
3	91.55	91.53	90.77	90.61	90.53	90.23
4	60.34	60.88	60.37	61.55	61.61	63.61
5	40.02	39.78	40.83	40.88	40.35	42.37
6	90.82	91.19	89.59	90.42	91.27	92.26
7	61.13	61.56	61.64	62.34	62.48	63.77
8	41.33	41.54	40.29	40.28	40.66	41.68
9	91.65	91.72	90.78	91.16	90.58	92.64
10	61.94	62.15	61.35	62.04	60.37	60.65
11	41.38	41.17	43.55	42.43	40.64	42.69
12	92.48	92.86	90.27	91.22	90.91	93.63
13	63.71	64.05	64.91	63.24	62.28	63.81
14	40.03	40.53	40.35	41.61	41.08	43.37
15	91.67	91.89	93.62	94.51	92.94	91.96
Max.	**92.48**	**92.86**	**93.62**	**94.51**	**92.94**	**93.63**
Min.	**40.02**	**39.78**	**40.29**	**40.28**	**40.18**	**41.68**
Mean.	**64.77**	**64.88**	**64.61**	**65.02**	**64.55**	**66.03**

Testgroup 2:

All values represented in milli-Ohms.

Product name:

Column.	Group	Lot
-1-:	2	1-10
-2-:	2	1-10

	-1-	*-2-*
1	64.21	64.38
2	42.16	41.89
3	91.86	92.22
4	62.47	62.37
5	38.85	38.81
6	88.67	89.31
7	63.22	62.93
8	42.27	42.31
9	93.69	92.68
10	61.97	61.56
11	42.59	42.44
12	91.71	91.32
13	66.20	66.49
14	40.53	41.07
15	91.11	91.52
16	67.54	68.12
17	43.84	43.98
18	94.93	94.98
19	63.55	64.11
20	40.25	40.54
21	93.59	94.26
22	63.02	62.67
23	44.54	44.12
24	97.58	98.58
25	63.65	61.79
26	42.14	41.86
27	90.20	91.74
28	63.38	63.33
29	40.47	40.28
30	92.50	91.87
Max.	**97.58**	**98.58**
Min.	**38.85**	**38.81**
Mean.	**66.09**	**66.12**

Testgroup 7 and 8.

All values represented in milli-Ohms.

Product name:

Column.	Group	Lot	Test
-1-:	7	1-5	initial
-2-:	7	1-5	final
-3-:	8	1-5	initial
-4-:	8	1-5	final

	-1-	*-2-*	*-3-*	*-4-*
1	59.24	60.62	62.13	61.12
2	40.23	40.65	43.19	42.99
3	89.67	89.54	92.77	92.64
4	60.21	61.52	64.67	65.21
5	39.55	40.31	41.21	41.22
6	91.85	91.88	91.75	90.90
7	60.85	61.65	61.99	62.03
8	41.24	41.53	42.36	42.57
9	91.24	90.99	91.52	91.65
10	61.30	61.33	60.34	61.23
11	41.54	42.02	41.27	41.27
12	92.69	92.98	91.36	90.58
13	62.50	62.01	62.75	62.96
14	41.36	42.10	41.34	42.55
15	90.21	90.34	92.24	92.46
Max.	**92.69**	**92.98**	**92.77**	**92.64**
Min.	**39.55**	**40.31**	**41.21**	**41.22**
Mean.	**64.25**	**64.63**	**65.39**	**65.42**

Vibration (sinusoidal): (testgroup 1)
No interruptions of continuity longer than 1 micro-second have been detected.

Vibration (random): (testgroup 1)
No interruptions of continuity longer than 1 micro-second have been detected.

Physical shock: (testgroup 1)
No interruptions of continuity longer than 1 micro-second have been detected.

Contact normal force: (testgroup 2)
All measured values meet the requirements of 0.9 N max. at maximum deflection and 0.1 N min. at 0.5 mm distance from the housing top. See the tables, below.

Normal Forces SIM 5D Testgroup 2, Initial and Final; forces at max. deflection									
Sample	F Down [N]			F Up [N]			F Average [N]		
	Initial	Final	Change	Initial	Final	Change	Initial	Final	Change
Group 2-1 Contact 1	0.76	0.80	0.04	0.74	0.79	0.06	0.75	0.80	0.05
Group 2-1 Contact 2	0.76	0.79	0.03	0.75	0.80	0.05	0.75	0.79	0.04
Group 2-1 Contact 3	0.74	0.75	0.01	0.74	0.74	0.01	0.74	0.75	0.01
Group 2-1 Contact 4	0.78	0.80	0.01	0.75	0.75	0.00	0.77	0.78	0.01
Group 2-1 Contact 5	0.70	0.70	0.00	0.68	0.68	0.01	0.69	0.69	0.00
Group 2-1 Contact 6	0.72	0.74	0.01	0.73	0.73	0.00	0.73	0.73	0.01
Group 2-2 Contact 1	0.76	0.78	0.02	0.74	0.78	0.04	0.75	0.78	0.03
Group 2-2 Contact 2	0.80	0.82	0.03	0.77	0.81	0.04	0.78	0.82	0.03
Group 2-2 Contact 3	0.75	0.80	0.05	0.74	0.78	0.04	0.75	0.79	0.04
Group 2-2 Contact 4	0.76	0.77	0.01	0.73	0.75	0.02	0.75	0.76	0.01
Group 2-2 Contact 5	0.77	0.80	0.03	0.75	0.81	0.06	0.76	0.80	0.04
Group 2-2 Contact 6	0.77	0.76	-0.01	0.74	0.80	0.06	0.75	0.78	0.02
Group 2-3 Contact 1	0.79	0.80	0.01	0.76	0.77	0.01	0.77	0.79	0.01
Group 2-3 Contact 2	0.74	0.75	0.01	0.72	0.75	0.03	0.73	0.75	0.02
Group 2-3 Contact 3	0.75	0.77	0.02	0.73	0.79	0.06	0.74	0.78	0.04
Group 2-3 Contact 4	0.77	0.78	0.01	0.73	0.82	0.10	0.75	0.80	0.05
Group 2-3 Contact 5	0.75	0.77	0.01	0.72	0.75	0.03	0.74	0.76	0.02
Group 2-3 Contact 6	0.73	0.76	0.03	0.69	0.86	0.17	0.71	0.81	0.10
Group 2-4 Contact 1	0.81	0.83	0.02	0.78	0.82	0.04	0.79	0.82	0.03
Group 2-4 Contact 2	0.80	0.77	-0.03	0.79	0.79	0.00	0.79	0.78	-0.02
Group 2-4 Contact 3	0.75	0.79	0.04	0.73	0.77	0.05	0.74	0.78	0.05
Group 2-4 Contact 4	0.78	0.81	0.03	0.74	0.81	0.07	0.76	0.81	0.05
Group 2-4 Contact 5	0.74	0.81	0.07	0.72	0.82	0.09	0.73	0.81	0.08
Group 2-4 Contact 6	0.82	0.75	-0.07	0.77	0.74	-0.03	0.80	0.74	-0.05
Group 2-5 Contact 1	0.77	0.78	0.01	0.76	0.77	0.01	0.76	0.77	0.01
Group 2-5 Contact 2	0.81	0.78	-0.04	0.81	0.77	-0.04	0.81	0.77	-0.04
Group 2-5 Contact 3	0.76	0.79	0.03	0.75	0.79	0.03	0.76	0.79	0.03
Group 2-5 Contact 4	0.75	0.78	0.03	0.71	0.81	0.10	0.73	0.80	0.07
Group 2-5 Contact 5	0.74	0.82	0.08	0.72	0.85	0.13	0.73	0.84	0.10
Group 2-5 Contact 6	0.75	0.79	0.04	0.73	0.83	0.11	0.74	0.81	0.07
Group 2-6 Contact 1	0.76	0.76	0.01	0.74	0.76	0.02	0.75	0.76	0.02
Group 2-6 Contact 2	0.81	0.78	-0.02	0.77	0.76	0.00	0.79	0.77	-0.01
Group 2-6 Contact 3	0.80	0.77	-0.03	0.75	0.76	0.01	0.78	0.77	-0.01
Group 2-6 Contact 4	0.77	0.78	0.01	0.74	0.85	0.11	0.76	0.82	0.06
Group 2-6 Contact 5	0.76	0.75	-0.01	0.73	0.75	0.02	0.75	0.75	0.01
Group 2-6 Contact 6	0.72	0.72	0.00	0.69	0.73	0.04	0.71	0.73	0.02
Group 2-7 Contact 1	0.79	0.80	0.01	0.78	0.80	0.02	0.78	0.80	0.02
Group 2-7 Contact 2	0.74	0.75	0.02	0.70	0.86	0.15	0.72	0.80	0.09
Group 2-7 Contact 3	0.75	0.76	0.01	0.72	0.80	0.08	0.73	0.78	0.05
Group 2-7 Contact 4	0.82	0.80	-0.02	0.79	0.80	0.01	0.80	0.80	0.00
Group 2-7 Contact 5	0.80	0.80	0.00	0.76	0.75	-0.01	0.78	0.78	0.00
Group 2-7 Contact 6	0.79	0.81	0.01	0.76	0.78	0.02	0.78	0.79	0.02
Group 2-8 Contact 1	0.76	0.77	0.00	0.76	0.78	0.02	0.76	0.78	0.01
Group 2-8 Contact 2	0.80	0.75	-0.04	0.74	0.76	0.02	0.77	0.76	-0.01
Group 2-8 Contact 3	0.76	0.79	0.03	0.74	0.78	0.04	0.75	0.78	0.04
Group 2-8 Contact 4	0.82	0.80	-0.02	0.78	0.81	0.02	0.80	0.80	0.00
Group 2-8 Contact 5	0.81	0.82	0.01	0.77	0.92	0.14	0.79	0.87	0.08
Group 2-8 Contact 6	0.80	0.79	-0.01	0.76	0.85	0.09	0.78	0.82	0.04
Group 2-9 Contact 1	0.76	0.81	0.04	0.74	0.83	0.09	0.75	0.82	0.06
Group 2-9 Contact 2	0.75	0.77	0.03	0.73	0.77	0.03	0.74	0.77	0.03
Group 2-9 Contact 3	0.73	0.84	0.10	0.71	0.81	0.11	0.72	0.82	0.10
Group 2-9 Contact 4	0.80	0.82	0.03	0.73	0.78	0.05	0.76	0.80	0.04
Group 2-9 Contact 5	0.72	0.74	0.01	0.68	0.74	0.07	0.70	0.74	0.04
Group 2-9 Contact 6	0.72	0.74	0.01	0.69	0.74	0.05	0.71	0.74	0.03
Group 2-10 Contact 1	0.76	0.78	0.01	0.76	0.78	0.02	0.76	0.78	0.02
Group 2-10 Contact 2	0.78	0.81	0.03	0.82	0.79	-0.03	0.80	0.80	0.00
Group 2-10 Contact 3	0.73	0.81	0.08	0.73	0.79	0.05	0.73	0.80	0.07
Group 2-10 Contact 4	0.75	0.76	0.00	0.72	0.83	0.11	0.74	0.80	0.06
Group 2-10 Contact 5	0.75	0.75	-0.01	0.71	0.75	0.04	0.73	0.75	0.01
Group 2-10 Contact 6	0.76	0.76	0.00	0.74	0.84	0.11	0.75	0.80	0.05
Maximum:	0.82	0.84	0.10	0.82	0.92	0.17	0.81	0.87	0.10
Minimum:	0.70	0.70	-0.07	0.68	0.68	-0.04	0.69	0.69	-0.05
Average:	**0.77**	**0.78**	**0.01**	**0.74**	**0.79**	**0.05**	**0.75**	**0.78**	**0.03**
Average - 3SD:	0.68	0.70	-0.07	0.65	0.67	-0.09	0.67	0.70	-0.07
Average + 3SD:	0.85	0.86	0.10	0.83	0.91	0.18	0.84	0.87	0.13
StDev.:	0.03	0.03	0.03	0.03	0.04	0.05	0.03	0.03	0.03

Normal Forces SIM 5D Testgroup 2, Initial and Final; forces at 0.5 mm from housing top									
Sample	F Down [N]			F Up [N]			F Average [N]		
	Initial	Final	Change	Initial	Final	Change	Initial	Final	Change
Group 2-1 Contact 1	0.33	0.37	0.03	0.29	0.31	0.03	0.31	0.34	0.03
Group 2-1 Contact 2	0.31	0.34	0.02	0.28	0.29	0.01	0.30	0.31	0.01
Group 2-1 Contact 3	0.30	0.30	0.00	0.25	0.27	0.02	0.27	0.29	0.01
Group 2-1 Contact 4	0.33	0.34	0.01	0.29	0.28	-0.01	0.31	0.31	0.00
Group 2-1 Contact 5	0.29	0.29	0.00	0.25	0.24	-0.02	0.27	0.26	-0.01
Group 2-1 Contact 6	0.30	0.30	0.01	0.26	0.25	0.00	0.28	0.28	0.00
Group 2-2 Contact 1	0.32	0.32	0.00	0.29	0.29	0.00	0.31	0.30	0.00
Group 2-2 Contact 2	0.34	0.35	0.01	0.30	0.31	0.01	0.32	0.33	0.01
Group 2-2 Contact 3	0.31	0.36	0.05	0.28	0.32	0.04	0.29	0.34	0.05
Group 2-2 Contact 4	0.29	0.33	0.04	0.27	0.28	0.01	0.28	0.30	0.02
Group 2-2 Contact 5	0.33	0.33	0.00	0.27	0.28	0.01	0.30	0.30	0.00
Group 2-2 Contact 6	0.33	0.30	-0.03	0.29	0.27	-0.03	0.31	0.28	-0.03
Group 2-3 Contact 1	0.34	0.33	0.00	0.28	0.29	0.01	0.31	0.31	0.00
Group 2-3 Contact 2	0.29	0.31	0.01	0.26	0.28	0.02	0.28	0.29	0.01
Group 2-3 Contact 3	0.32	0.34	0.02	0.28	0.29	0.01	0.30	0.32	0.02
Group 2-3 Contact 4	0.31	0.33	0.02	0.28	0.28	0.00	0.29	0.30	0.01
Group 2-3 Contact 5	0.30	0.30	0.01	0.27	0.27	0.00	0.28	0.29	0.00
Group 2-3 Contact 6	0.29	0.31	0.02	0.25	0.25	0.00	0.27	0.28	0.01
Group 2-4 Contact 1	0.35	0.35	0.00	0.29	0.30	0.01	0.32	0.33	0.00
Group 2-4 Contact 2	0.35	0.32	-0.03	0.29	0.28	-0.01	0.32	0.30	-0.02
Group 2-4 Contact 3	0.32	0.34	0.02	0.28	0.30	0.02	0.30	0.32	0.02
Group 2-4 Contact 4	0.33	0.32	-0.01	0.30	0.29	-0.01	0.31	0.31	-0.01
Group 2-4 Contact 5	0.30	0.32	0.02	0.27	0.28	0.01	0.29	0.30	0.02
Group 2-4 Contact 6	0.35	0.31	-0.04	0.27	0.28	0.00	0.31	0.30	-0.02
Group 2-5 Contact 1	0.32	0.31	-0.01	0.29	0.28	0.00	0.31	0.30	-0.01
Group 2-5 Contact 2	0.34	0.31	-0.04	0.31	0.27	-0.03	0.33	0.29	-0.04
Group 2-5 Contact 3	0.31	0.32	0.01	0.28	0.28	0.01	0.29	0.30	0.01
Group 2-5 Contact 4	0.29	0.32	0.03	0.27	0.27	0.00	0.28	0.30	0.02
Group 2-5 Contact 5	0.30	0.33	0.03	0.26	0.29	0.03	0.28	0.31	0.03
Group 2-5 Contact 6	0.31	0.31	0.00	0.27	0.27	0.00	0.29	0.29	0.00
Group 2-6 Contact 1	0.32	0.32	0.01	0.27	0.29	0.01	0.30	0.30	0.01
Group 2-6 Contact 2	0.31	0.32	0.01	0.28	0.30	0.02	0.30	0.31	0.01
Group 2-6 Contact 3	0.37	0.32	-0.05	0.25	0.28	0.03	0.31	0.30	-0.01
Group 2-6 Contact 4	0.31	0.31	0.00	0.28	0.26	-0.02	0.29	0.29	-0.01
Group 2-6 Contact 5	0.30	0.30	0.00	0.27	0.25	-0.01	0.28	0.28	0.00
Group 2-6 Contact 6	0.29	0.29	0.00	0.26	0.25	-0.01	0.27	0.27	0.00
Group 2-7 Contact 1	0.34	0.34	-0.01	0.30	0.29	0.00	0.32	0.31	0.00
Group 2-7 Contact 2	0.30	0.31	0.01	0.27	0.27	0.00	0.29	0.29	0.00
Group 2-7 Contact 3	0.32	0.33	0.01	0.28	0.30	0.02	0.30	0.31	0.02
Group 2-7 Contact 4	0.35	0.34	-0.01	0.28	0.29	0.01	0.31	0.31	0.00
Group 2-7 Contact 5	0.34	0.32	-0.02	0.31	0.28	-0.03	0.32	0.30	-0.03
Group 2-7 Contact 6	0.33	0.33	0.00	0.29	0.29	0.00	0.31	0.31	0.00
Group 2-8 Contact 1	0.31	0.31	0.00	0.27	0.28	0.01	0.29	0.30	0.01
Group 2-8 Contact 2	0.33	0.31	-0.02	0.26	0.27	0.02	0.29	0.29	0.00
Group 2-8 Contact 3	0.34	0.34	0.00	0.29	0.29	0.00	0.31	0.31	0.00
Group 2-8 Contact 4	0.36	0.32	-0.04	0.29	0.28	-0.01	0.33	0.30	-0.02
Group 2-8 Contact 5	0.33	0.32	-0.01	0.29	0.28	-0.01	0.31	0.30	-0.01
Group 2-8 Contact 6	0.37	0.30	-0.07	0.26	0.26	0.00	0.31	0.28	-0.03
Group 2-9 Contact 1	0.33	0.34	0.02	0.28	0.31	0.03	0.31	0.33	0.02
Group 2-9 Contact 2	0.30	0.32	0.02	0.26	0.27	0.01	0.28	0.29	0.01
Group 2-9 Contact 3	0.30	0.36	0.07	0.25	0.32	0.07	0.27	0.34	0.07
Group 2-9 Contact 4	0.34	0.33	-0.01	0.29	0.29	0.00	0.31	0.31	-0.01
Group 2-9 Contact 5	0.29	0.28	-0.01	0.25	0.25	0.00	0.27	0.26	0.00
Group 2-9 Contact 6	0.30	0.28	-0.02	0.24	0.25	0.00	0.27	0.26	-0.01
Group 2-10 Contact 1	0.33	0.34	0.01	0.27	0.30	0.02	0.30	0.32	0.02
Group 2-10 Contact 2	0.35	0.34	-0.01	0.29	0.30	0.01	0.32	0.32	0.00
Group 2-10 Contact 3	0.30	0.35	0.05	0.26	0.31	0.04	0.28	0.33	0.05
Group 2-10 Contact 4	0.31	0.29	-0.01	0.27	0.25	-0.02	0.29	0.27	-0.02
Group 2-10 Contact 5	0.31	0.28	-0.03	0.26	0.24	-0.02	0.28	0.26	-0.02
Group 2-10 Contact 6	0.33	0.30	-0.02	0.27	0.26	0.00	0.30	0.28	-0.01
Maximum:	0.37	0.37	0.07	0.31	0.32	0.07	0.33	0.34	0.07
Minimum:	0.29	0.28	-0.07	0.24	0.24	-0.03	0.27	0.26	-0.04
Average:	**0.32**	**0.32**	**0.00**	**0.28**	**0.28**	**0.00**	**0.30**	**0.30**	**0.00**
Average - 3SD:	0.26	0.26	-0.07	0.23	0.22	-0.05	0.25	0.24	-0.05
Average + 3SD:	0.38	0.38	0.07	0.32	0.34	0.06	0.35	0.36	0.06
StDev.:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Insulation resistance: (testgroup 3)
Measured between all adjacent contacts of testgroup 3:
Initial: 450 – 1700 TeraOhm.
Final: 80 – 600 TeraOhm.

Voltage Proof: (testgroup 3)
Both initially and final, all samples of testgroup 3 could withstand 200 V_{AC} during one minute; no breakdown or flashover occurred.

Solderability: (testgroup 5)
No dewetting or pinholes have been detected. A smooth soldering surface was observed.

Resistance to soldering heat: (all testgroups, except testgroup 5)
None of the tested specimens showed cracks, chips or melting, or any other aspects that can influence the functioning of the product.

Examination of product: (general)
Mechanical operation tests caused plastic wear particles on and near the contacts, and some contact wear was noticed. No nickel underlayer was visible. Salt spray testing and artificial perspiration caused some corrosion in the contact legs, but not on or near the contact area.