



# Reliability Test Report

Type: Photoelectric Component

Model: PDS- Series

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Reliability and Quality Control Department  
Beijing SWT Optical Communication Technology Ltd.



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1. Summary of test results

Group	Test	Reference	Conditions	SS		C	QTY Fail	See Sect.
				R	NEC			
I	Mechanical Shock	MIL-STD-883E method 2002	condition B 1500g peak Level, 0.5ms half sine, 5 times/axis, orientations X,Y and Z	11	11	0	0	Tab.1
	Vibration	MIL-STD-883E method 2007	condition A 196m/s <sup>2</sup> , 20~ 2000Hz, 4 min/cycle, 4cycles/axis, orientations X, Y and Z	11	11	0	0	Tab.2
	Lead integrity	MIL-STD-883E	9.8N, 5seconds/time, 3time	—	11	—	0	Tab.3
	Thermal shock	MIL-STD-883E method 1011	ΔT=100°C, Liquid to liquid, 4min/cycle, 20cycle	11	11	0	0	Tab.4
	Solderability	MIL-STD-883E method 2003	230°C, 5sec	11	11	0	0	Tab.5
	Fine leak	MIL-STD-883E method 1014	MIL-STD-883E method 1014	—	11	—	0	Tab.6
	Die shear	MIL-STD-883E method 2019	MIL-STD-883E method 2019	—	11	—	0	Tab.7
	Wire bond strength	MIL-STD-883E method 2011	MIL-STD-883E method 2011	—	4	—	0	Tab.8
II	Accelerated APC aging(1)	Telcordia GR-468-CORE	Ta=85°C, V <sub>Bias</sub> =-10V, Aging time=5000hrs	25	25	—	0	Tab.9
	High temp. storage	Telcordia GR-468-CORE	Ta=+85°C, Aging time=2,000hrs	11	11	0	0	Tab.10
	Low temp. storage	Telcordia GR-468-CORE	Ta=-40°C, Aging time=2,000hrs	11	11	0	0	Tab.11
	Temperature cycling	Section9.12 GR-468-CORE	TH=+85°C, TL=-40°C, 100cycles	11	11	0	0	Tab.12
	Damp heat	MIL-STD-202 method 103	Ta=85°C, RH=85%, Aging time=1,000hrs	11	11	0	0	Tab.13

The information in this document is based on the data on the issued data at the latest. The information is subject to change without notice.



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**Test Report**

NO	Test name	Test unit	Time	Result
1	Mechanical Shock	CESI	2005-3-21	Pass
2	Vibration	CESI	2005-3-21	Pass
3	Lead integrity	SWT	2005-1-12	Pass
4	Thermal shock	SWT	2005-2-1	Pass
5	Solderability	Electronic Component Reliability Test Center	2005-2-1	Pass
6	Fine leak	Electronic Component Reliability Test Center	2005-2-1	Pass
7	Die shear	Electronic Component Reliability Test Center	2005-2-1	Pass
8	Wire bond strength	Electronic Component Reliability Test Center	2005-2-1	Pass
9	Accelerated aging(1) APC	SWT	2004-7-25	Pass
10	High temp. storage	SWT	2005-3-28	Pass
11	Low temp. storage	SWT	2005-11-3	Pass
12	Temperature cycling	SWT	2005-6-24	Pass
13	Damp heat	SWT	2006-1-14	Pass

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2. Mechanical integrity test results

Table 1: Mechanical shock test

<b>Device name</b>	Photoelectric Component	<b>Model</b>	PDS143-CFA-C02	<b>Device type</b>	Photoelectric Component
<b>Standard</b>	_____	<b>Quality level</b>	_____	<b>Package type</b>	_____
<b>Production date</b>	2004.12.21	<b>Inspection lot number</b>	04110908	<b>Device No</b>	
<b>Internal cavity</b>	_____	<b>Material and wire diameter of The Bondwire</b>	_____	<b>Chip area</b>	_____
<b>Specified Sample</b>	_____	<b>Sample</b>		11	
<b>Specified resample</b>	_____	<b>Resample</b>		_____	
<b>Test criterion or method</b>	MIL-STD-883 method 2002 test condition B				
<p><b>Test Course:</b>          Beijing SWI Optical communication CO. Ltd brought US 11 Photoelectric Components on January 24th, 2005, and asked for doing the test of mechanical shock..          1.Test equipment:SM-110-MP shock-testing apparatus      Latest reverification date:2005.109          2.Environmental condition: temperature:23° C                      humidity:40%          3.Test date:2005.1.24          4.Test condition: These devices must be sturdily mounted on the SM-110-MP shock-testing apparatus. They shall be subject to 5 shock pulse of the 1500g peak Level and for the 0.5ms pulse duration specified in each of the orientations X,Y and Z.          5.Pass Criteria: After completion of the test, through external visual, there were no evidence of damage or defect to the case, seals and illegible marking on these devices. The electrical measurement shall be made by client to determine whether these devices will be failure.</p> <p><b>Result:</b> After completion of the test, through external visual, there were no evidence of damage or defect to the case, seals and illegible markings on these devices. The electrical measurement shall be made by client to determine whether these devices will be failure.</p> <p><b>Notice:</b>          Test record must be held by DPA laboratory of CESI</p>					

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**Record of detector reliability test**

NO: 2-1

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-C02				<b>Test date:</b> 05-1-23			
<b>Test condition:</b> Temp. 24°C R.H. 48%				<b>Test No.:</b> 11pcs			
<b>Test state Before Mechanical shock</b>							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	Result
Specification	Id<0.25nA	Re≥0.80A/W	V <sub>b</sub> >35V	C≤0.75pF	R <sub>L</sub> ≤-40dB	≤-75dBc	Pass/Fail
SWT-W0031145	0.003	0.83	63	0.66	-49.0	-82.41	
SWT-W0031146	0.002	0.85	74	0.62	-48.0	-81.32	
SWT-W0031147	0.004	0.84	76	0.65	-47.3	-79.45	
SWT-W0031148	0.005	0.82	73	0.64	-54.0	-77.02	
SWT-W0031149	0.003	0.86	76	0.61	-55.0	-80.56	
SWT-W0031150	0.007	0.81	69	0.68	-49.0	-77.63	
SWT-W0031151	0.002	0.80	72	0.70	-44.9	-76.09	
SWT-W0031152	0.005	0.82	65	0.61	-49.2	-81.23	
SWT-W0031153	0.002	0.82	69	0.60	-45.0	-79.32	
SWT-W0031154	0.005	0.83	66	0.62	-49.0	-82.65	
SWT-W0030816	0.03	0.87	57	0.65	-53.0	-83.12	
<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-C02				<b>Test date:</b> 05-1-26			
<b>Test condition:</b> Temp. 24°C R.H. 48%				<b>Test No.:</b> 11pcs			
<b>Test state After Mechanical shock</b>							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	Result
Specification	Id<0.25nA	Re≥0.80A/W	V <sub>b</sub> >35V	C≤0.75pF	R <sub>L</sub> ≤-40dB	≤-75dBc	Pass/Fail
SWT-W0031145	0.002	0.82	62	0.65	-48.0	-82.19	Pass
SWT-W0031146	0.001	0.86	76	0.61	-48.0	-81.61	Pass
SWT-W0031147	0.004	0.85	74	0.65	-46.2	-78.45	Pass
SWT-W0031148	0.006	0.82	72	0.63	-54.0	-77.02	Pass
SWT-W0031149	0.003	0.85	76	0.61	-54.0	-80.65	Pass
SWT-W0031150	0.006	0.81	68	0.69	-48.0	-76.74	Pass
SWT-W0031151	0.002	0.80	72	0.70	-44.9	-76.08	Pass
SWT-W0031152	0.003	0.81	64	0.60	-49.2	-80.21	Pass
SWT-W0031153	0.001	0.82	68	0.60	-44.4	-78.49	Pass
SWT-W0031154	0.005	0.82	66	0.63	-48.0	-82.49	Pass
SWT-W0030816	0.001	0.88	52	0.64	-52.0	-83.11	Pass

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**Table 2: Vibration, variable frequency test**

<b>Device name</b>	Photoelectric Component	<b>Model</b>	PDS143-CFA-C02	<b>Device type</b>	Photoelectric Component
<b>Standard</b>	-----	<b>Quality level</b>	-----	<b>Package type</b>	-----
<b>Production date</b>	-----	<b>Inspection lot number</b>	-----	<b>Device No.</b>	-----
<b>Internal Cavity</b>	-----	<b>Material and wire diameter of The Bondwire</b>	-----	<b>Chip area</b>	-----
<b>Specified Sample</b>	-----		<b>Sample</b>	11	
<b>Specified resample</b>	-----		<b>Resample</b>	-----	
<b>Test Criterion or Method</b>	MIL-STD-883 Method2007 Test condition A				
<p><b>Test Course:</b></p> <p>Beijing SWT Optical Communication Co. Ltd brought us 11 photoelectric Components on March 1st, 2005, and asked for doing the of variable frequency vibration.</p> <ol style="list-style-type: none"> <li>Test equipment: SA15-S452-LP/VWIN Vibration-testing apparatus Latest reverification. Date:2006.5.18</li> <li>Environmental condition: temperature:24      humidity:48%</li> <li>Test date:2005.3.1</li> <li>Test condition: The devices must be rigidly fastened on the vibration platform. The vibration frequency shall be varied approximately logarithmically between 20 and 2,000Hz. The entire frequency range of 20 to 2,000 Hz and return to 20Hz shall be traversed in not less than 4minutes. This cycle shall be performed 4 times in each of the orientations X, Y and Z (total of 12 times).</li> <li>Pass Criteria: After completion of the test, through external visual ,there were no evidence of damage or defect to the case, seals and illegible markings on these devices. The electrical measurement shall be made by client to determine whether these devices will be failure.</li> </ol> <p>Result: After completion of the test, through external visual, there were no evidence of damage or defect to the case, seals and illegible markings on these devices. The electrical measurement shall be made by client to determine whether these devices will be failure.</p>					
<p>Notice:</p> <p>Test record must be held by DPA laboratory of CESI</p>					

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**Record of detector reliability test**

NO: 2-2

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-C02				<b>Test date:</b> 05-2-25			
<b>Test condition:</b> Temp. 24°C R.H. 48%				<b>Test No.:</b> 11pcs			
<b>Test state Before Vibration, variable frequency</b>							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	Result
Specification	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>V<sub>b</sub>&gt;35V</b>	<b>C≤0.75pF</b>	<b>R<sub>L</sub>≤-40dB</b>	<b>≤-75dBc</b>	<b>Pass/Fail</b>
SWT-W0031145	0.002	0.82	62	0.65	-48.0	-82.19	
SWT-W0031146	0.001	0.86	76	0.61	-48.0	-81.61	
SWT-W0031147	0.004	0.85	74	0.65	-46.2	-78.45	
SWT-W0031148	0.006	0.82	72	0.63	-54.0	-77.02	
SWT-W0031149	0.003	0.85	76	0.61	-54.0	-80.65	
SWT-W0031150	0.006	0.81	68	0.69	-48.0	-76.74	
SWT-W0031151	0.002	0.80	72	0.70	-44.9	-76.08	
SWT-W0031152	0.003	0.81	64	0.60	-49.2	-80.21	
SWT-W0031153	0.001	0.82	68	0.60	-44.4	-78.49	
SWT-W0031154	0.005	0.82	66	0.63	-48.0	-82.49	
SWT-W0030816	0.001	0.88	52	0.64	-52.0	-83.11	

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-C02				<b>Test date:</b> 05-3-2			
<b>Test condition:</b> Temp. 24°C R.H. 48%				<b>Test No.:</b> 11pcs			
<b>Test state After Vibration, variable frequency</b>							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	Result
Specification	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>V<sub>b</sub>&gt;35V</b>	<b>C≤0.75pF</b>	<b>R<sub>L</sub>≤-40dB</b>	<b>≤-75dBc</b>	<b>Pass/Fail</b>
SWT-W0031145	0.007	0.84	62	0.62	-47.0	-81.28	Pass
SWT-W0031146	0.004	0.86	76	0.60	-48.2	-79.65	Pass
SWT-W0031147	0.005	0.81	74	0.65	-46.2	-78.45	Pass
SWT-W0031148	0.006	0.84	72	0.64	-54.2	-77.02	Pass
SWT-W0031149	0.007	0.84	76	0.61	-54.0	-80.65	Pass
SWT-W0031150	0.004	0.80	68	0.69	-47.9	-77.23	Pass
SWT-W0031151	0.005	0.84	72	0.72	-43.5	-76.08	Pass
SWT-W0031152	0.008	0.81	64	0.61	-49.2	-81.23	Pass
SWT-W0031153	0.009	0.87	68	0.60	-44.4	-78.49	Pass
SWT-W0031154	0.003	0.85	66	0.62	-48.5	-83.12	Pass
SWT-W0030816	0.005	0.80	52	0.63	-53.1	-83.11	Pass

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**Table 3: Lead integrity test**

<b>Product type</b>	PDS143-CFA-C01	<b>Sample size</b>	11pcs
<b>Temp.</b>	23℃	<b>R.H.</b>	48%
<b>Tester</b>	1 kilogram poise	mechanical stopwatch	cotton thread
<b>According to</b>	MIL-STD-883		
<b>Receipt Date</b>	Jan. 12, 2005	<b>Test Date</b>	Jan. 12, 2005
<b>Test Result</b>	<p>1.Please refer to the ‘Record of detector fiber pull test’ and ‘Record of detector reliability test’ in appendix for all of the test and experiment data.</p> <p>2.The visual checking of 11pcs samples was passed before and after the fiber pull test.</p> <p>3.The photoelectric parameters were in specification before and after the fiber pull test.</p> <p>4.the test evaluation according as: After the fiber pull test, if the visual checking and the photoelectric parameters verifying are all passed.</p> <p>5.Fiber pull test results: Passed</p>		

<b>Sample name</b>	Photoelectricity detector		<b>Test item</b>	Fiber Pull				
<b>Sample type</b>	PDS143-CFA-C01		<b>Sampling time</b>	2005-1-12				
<b>Reference Standard</b>	MIL-STD-883		<b>Test condition</b>	23℃				
<b>Tester</b>	1 kilogram poise	anical stopwatch	cotton thread					
<b>Test place</b>	SWT		<b>environment condition</b>					
<b>Test method and process</b>	<p>1.Wrap one end of the cotton thread with a one-kilogram poise, the second end with the detector's fiber, and fix them with the glue.</p> <p>2.Pull the poise by the cotton thread and keep 5 seconds, repeat three times.</p> <p>note: Keep the uprightness balance when pull up and put down the poise.</p>							
<b>Sample lot</b>	04110908							
<b>Sample No.</b>	8							
	Test content							
	1	2	3					
<b>Test No.</b>	<b>Shipping No.</b>	<b>Pull (g)</b>	<b>Time(s)</b>	<b>Pull (g)</b>	<b>Time(s)</b>	<b>Pull (g)</b>	<b>Time(s)</b>	<b>Visual inspection</b>
1	SWT-W0031146	1000	5	1000	5	1000	5	Passed
2	SWT-W0031151	1000	5	1000	5	1000	5	Passed
3	SWT-W0031152	1000	5	1000	5	1000	5	Passed
4	SWT-W0031153	1000	5	1000	5	1000	5	Passed
5	SWT-W0031148	1000	5	1000	5	1000	5	Passed
6	SWT-W0031150	1000	5	1000	5	1000	5	Passed
7	SWT-W0031147	1000	5	1000	5	1000	5	Passed
8	SWT-W0031149	1000	5	1000	5	1000	5	Passed
9	SWT-W0031154	1000	5	1000	5	1000	5	Passed
10	SWT-W0031145	1000	5	1000	5	1000	5	Passed
11	SWT-W0030816	1000	5	1000	5	1000	5	Passed

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**Record of detector reliability test**

NO: 2-3

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-C02				<b>Test date:</b> 05-1-12			
<b>Test condition:</b> Temp. 23°C R.H. 48%				<b>Test No.:</b> 11pcs			
<b>Test state</b> Before Lead integrity							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	Result
Specification	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>V<sub>b</sub>&gt;35V</b>	<b>C≤0.75pF</b>	<b>R<sub>L</sub>≤-40dB</b>	<b>≤-75dBc</b>	<b>Pass/Fail</b>
SWT-W0031146	0.08	0.90	64	0.78	<-40	-80.80	
SWT-W0031151	0.08	0.83	66	0.80	<-40	-75.18	
SWT-W0031152	0.08	0.86	64	0.89	<-40	-80.41	
SWT-W0031153	0.08	0.81	68	0.84	<-40	-81.80	
SWT-W0031148	0.08	0.82	64	0.84	<-40	-76.73	
SWT-W0031150	0.08	0.84	68	0.78	<-40	-77.62	
SWT-W0031147	0.08	0.83	68	0.78	<-40	-80.54	
SWT-W0031149	0.08	0.85	68	0.82	<-40	-81.42	
SWT-W0031154	0.09	0.84	68	0.89	<-40	-80.61	
SWT-W0031145	0.08	0.88	68	0.86	<-40	-80.56	
SWT-W0030816	0.08	0.85	48	0.86	<-40	-82.66	

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-C02				<b>Test date:</b> 05-1-12			
<b>Test condition:</b> Temp. 23°C R.H. 48%				<b>Test No.:</b> 11pcs			
<b>Test state</b> After Lead integrity							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	Result
Specification	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>V<sub>b</sub>&gt;35V</b>	<b>C≤0.75pF</b>	<b>R<sub>L</sub>≤-40dB</b>	<b>≤-75dBc</b>	<b>Pass/Fail</b>
SWT-W0031146	0.005	0.89	66	0.73	<-40	-81.09	Pass
SWT-W0031151	0.004	0.84	70	0.60	<-40	-78.60	Pass
SWT-W0031152	0.007	0.85	64	0.62	<-40	-82.58	Pass
SWT-W0031153	0.003	0.88	66	0.70	<-40	-81.16	Pass
SWT-W0031148	0.002	0.87	62	0.66	<-40	-78.88	Pass
SWT-W0031150	0.005	0.86	68	0.63	<-40	-78.57	Pass
SWT-W0031147	0.001	0.82	66	0.65	<-40	-80.55	Pass
SWT-W0031149	0.005	0.87	66	0.61	<-40	-80.60	Pass
SWT-W0031154	0.001	0.85	66	0.71	<-40	-81.69	Pass
SWT-W0031145	0.005	0.88	64	0.68	<-40	-81.98	Pass
SWT-W0030816	0.003	0.88	46	0.65	<-40	-79.43	Pass

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Table 4: Thermal shock test

<b>Product type</b>	PDS443-C-C	<b>Sample size</b>	11pcs
<b>Temp.</b>	24℃	<b>R.H.</b>	48%
<b>Tester</b>	water pot, timer, plate, fixture, thermometer		
<b>According to</b>	MIL-STD-883 Method 1011		
<b>Receipt Date</b>	Jan. 27, 2005	<b>Test Date</b>	Jan.28,2005/ Feb.1,2005
<b>Test Result</b>	<p>1. Please refer to the ‘Record of detector thermal shock test’ and ‘Record of detector reliability test’ in appendix for all of the test and experiment data</p> <p>2. Visual Checking The visual checking of 11pcs samples was passed before thermal shock test, one sample failed after the test (lens detached). Seven more samples were tested on February 1, 2005 and the visual checking of all samples was passed before and after the test.</p> <p>3 Photoelectric Parameter Checking The photoelectric parameters were passed before the thermal shock test, one sample failed after the test. Seven more samples were tested on February 1, 2005 and the photoelectric parameters were passed before the test.</p> <p>4. Failure Criteria: After subjection on the test, failure of any specified end-point measurement or examination, evidence of defects or damage to the case, leads, or seals, or illegible markings shall be considered a failure. Damage to marking caused by fixture or handling during tests shall not be caused for device rejection.</p> <p>5. Thermal Shock Test Results: After thermal shock test, one sample visual checking was failed (lens detached) and photoelectric parameter was failed. Seven more samples were tested on February 1, 2005 and one sample photoelectric parameter was failed. The final result of the thermal shock is failed.</p>		

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### Record of detector Thermal Shock test

Sample name	Photoelectricity detector	Test item	Thermal Shock																					
Sample type	PDS443-C-C	Sampling time	2005-1-28																					
Reference Standard	MIL-STD-883	Test condition	100℃ & 0℃																					
Tester	water pot, timer, plate, fixture, thermometer																							
Test place	SWT	entironment condition																						
Test method and process	1. Make the purity water freeze until it became ice. Put the ice into the plate and mix with purity water. The temperature of the mixture would 0℃. 2. The water pot was heated up and the temperature was 100℃. 3. The detectors was set in 100℃ for 2min, and then transferred into 0℃ for 2 min. This was repeated 20 times. note: The time must less than 10 second, when the detectors was in the air.																							
Test No.	Shipping No.	Test content																				Visual inspection		
		times	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		20	
1	C0001040	℃	98	99	99	99	99	98	98	99	99	99	99	98	98	98	98	99	99	99	98	99		
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2
		℃	0	0	0	0	0	1	1	1	1	1	1	1	0	0	1	1	1	2	2	2		1
2	C0001041	℃	99	99	98	99	99	98	99	99	99	98	99	99	99	98	99	99	99	98	99	99		
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2
		℃	2	1	0	1	1	0	0	0	1	1	1	1	1	1	2	2	2	1	1	1		1
3	C0001042	℃	99	98	99	99	99	98	99	99	99	98	99	98	98	98	99	99	98	99	98	99		
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2
		℃	1	1	1	0	0	1	0	1	1	2	1	0	1	1	0	0	0	1	1	1		1
4	C0001043	℃	98	99	98	99	99	98	99	98	99	99	98	99	99	99	98	99	99	99	98	98		
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2
		℃	2	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1		1
5	C0001044	℃	98	99	99	98	99	99	98	99	99	98	99	99	99	99	98	99	99	98	99	98		
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2
		℃	1	2	1	2	2	1	0	0	0	0	1	1	1	1	1	2	2	1	1	1		1
6	C0001045	℃	98	99	98	98	98	99	98	99	99	98	99	99	99	98	99	98	99	98	98	99		
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2
		℃	1	1	1	1	2	1	2	1	1	2	2	2	2	1	1	0	0	0	1	1		1
7	C0001046	℃	98	99	99	98	99	99	98	99	99	99	99	99	98	98	98	99	99	98	99	99		
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2
		℃	1	1	1	0	0	1	0	1	1	2	1	0	1	1	0	0	0	1	1	1		1
8	C0001047	℃	98	99	98	98	98	99	98	99	99	98	99	99	99	98	99	98	99	98	98	99		
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2
		℃	1	1	0	0	0	0	1	1	1	1	2	1	1	2	2	1	0	0	0	0		1
9	C0001048	℃	99	98	99	99	99	99	98	99	99	99	98	98	98	99	99	99	99	99	99	99		
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2

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		°C	1	1	1	2	2	2	1	1	1	1	1	1	1	1	0	0	0	0	1	1	
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
10	C0001049	°C	98	99	98	98	98	99	98	99	99	98	99	99	99	98	99	98	99	98	98	99	
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		°C	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
11	C0001050	°C	98	99	98	98	98	99	98	99	99	98	99	99	99	98	99	98	99	98	98	99	
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		°C	1	0	0	0	0	0	0	1	1	2	1	2	2	1	1	1	1	1	1	1	2
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
<b>7pcs amples</b>																							
12	C0001051	°C	98	98	99	98	99	99	98	99	99	99	99	99	99	99	99	98	99	98	99		
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		°C	1	1	1	0	0	0	1	1	1	1	2	1	1	2	2	1	0	0	0	1	
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
13	C0001052	°C	98	99	99	98	98	99	98	99	99	98	99	99	99	98	99	98	99	98	98	99	
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		°C	0	0	0	1	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
14	C0001053	°C	99	99	98	99	99	98	98	99	99	99	99	99	99	98	99	99	99	99	99	99	
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		°C	2	2	2	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1	1
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
15	C0001054	°C	99	99	98	98	99	99	98	99	99	98	99	99	99	98	99	98	99	98	98	99	
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		°C	1	1	1	2	2	2	1	0	0	0	0	1	1	1	1	1	2	2	1	1	1
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
16	C0001055	°C	99	99	98	99	98	99	98	99	99	98	99	99	99	98	98	98	99	98	98	99	
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		°C	0	0	0	0	0	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
17	C0001056	°C	99	99	98	99	98	98	98	99	99	99	99	99	98	98	99	98	99	99	99	99	
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		°C	0	1	1	1	2	1	2	2	1	1	1	1	1	0	1	1	0	0	0	1	1
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
18	C0001057	°C	98	99	98	98	98	99	98	99	99	98	99	99	99	98	99	98	99	98	98	99	
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		°C	1	0	0	1	1	0	1	1	2	2	1	1	0	1	1	1	0	0	1	1	1
		min	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

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**Record of detector reliability test**

NO: 2-4

Test place SWT				Product name: Photoelectricity detector		
Product type: PDS443-C-C				Test date: 2005-1-26		
Test condition Temp. 24°C		R.H. 48%		Test No. 18pcs		
Test state Before Thermal Shock						
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	IMD2 (dB)	Test Result
(Specification)	Id<0.25nA	Re≥0.80A/W	Vb>35V	C≤0.75pF	≤-75dBc	Pass/Fail
C0001040	0.006	0.86	56	0.62	-77.22	
C0001041	0.006	0.88	54	0.67	-78.17	
C0001042	0.004	0.87	54	0.66	-76.05	
C0001043	0.006	0.84	54	0.62	-75.51	
C0001044	0.01	0.86	52	0.62	-77.75	
C0001045	0.002	0.84	52	0.66	-79.4	
C0001046	0.008	0.87	52	0.63	-82.58	
C0001047	0.006	0.87	56	0.65	-76.55	
C0001048	0.007	0.86	52	0.65	-81.75	
C0001049	0.007	0.87	54	0.69	-80.02	
C0001050	0.008	0.88	56	0.68	-79.84	
C0001051	0.005	0.83	54	0.70	-76.82	
C0001052	0.005	0.87	54	0.67	-83.11	
C0001053	0.004	0.87	56	0.68	-78.51	
C0001054	0.005	0.87	60	0.63	-84.7	
C0001055	0.006	0.85	60	0.62	-82.84	
C0001056	0.004	0.85	60	0.65	-76.88	
C0001057	0.003	0.87	62	0.62	-76.23	
Product type: PDS443-C-C				Test date: 2005-1-26		
Test condition Temp. 24°C		R.H. 48%		Test No. 18pcs		
Test state Before Thermal Shock						
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	IMD2 (dB)	Test Result
(Specification)	Id<0.25nA	Re≥0.80A/W	Vb>35V	C≤0.75pF	≤-75dBc	Pass/Fail
C0001040	0.008	0.86	42	0.71	-77.22	Pass
C0001041	0.006	0.88	42	0.69	-78.17	Pass
C0001042	0.005	0	42	0.71	-76.05	Failed
C0001043	0.007	0.88	42	0.73	-75.51	Pass
C0001044	0.002	0.86	40	0.70	-77.75	Pass
C0001045	0.008	0.83	40	0.73	-79.4	Pass
C0001046	0.003	0.88	42	0.68	-82.58	Pass
C0001047	0.002	0.88	42	0.67	-76.55	Pass
C0001048	0.005	0.87	48	0.68	-81.75	Pass
C0001049	0.003	0.88	46	0.60	-80.02	Pass
C0001050	0.005	0.85	44	0.69	-79.84	Pass
<b>7pcs</b>						
C0001051	0.006	0.85	42	0.65	-83.11	Pass

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C0001052	0.007	0.88	40	0.65	-78.51	Pass
C0001053	0.03	0.89	43	0.65	-84.7	Pass
C0001054	0.01	0.86	36	0.65	-82.84	Pass
C0001055	0.008	0.87	40	0.64	-76.88	Pass
C0001056	0.009	0.87	42	0.68	-76.23	Pass
C0001057	0.004	0.86	47	0.57	-76.82	Pass

**Table5:Solderability Test**

<b>Product type</b>	PDS143-CFA-C01	<b>Sample size</b>	11pcs
<b>Temp.</b>	20℃	<b>R.H.</b>	29%
<b>Tester</b>			
<b>According to</b>	MIL-STD-883 Method 2003		
<b>Receipt Date</b>	Dec. 16, 2004	<b>Test Date</b>	Dec. 24, 2004
<b>Remark</b>	According to the customer's requirement, no need to do the steam aging test.		
<b>Test Results</b>	Passed. The dipped portion of terminations is well covered by a continuous new soldering coating.		

Compiled      张素娟

Checked        邹航

Approved      曾声奎

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**Table6: Helium Mass Spectrum Fine Leak Detection Test**

<b>Product type</b>	PDS443-C	<b>Sample size</b>	11pcs
<b>Temp.</b>	21℃	<b>R.H.</b>	40%
<b>Tester</b>	DGC1001, BY-II		
<b>According to</b>	MIL-STD-883 Method 1014		
<b>Receipt Date</b>	Mar. 18, 2005	<b>Test Date</b>	Mar. 21, 2005
<b>Test Results</b>	Passed		

**Fine Leak Detection Test Results**

Sample No.	Fine Leak Detection Test Pass criteria: $<5 \times 10^{-3}$ pa .cm <sup>3</sup> /s	
	Data	Result
1#	$3.8 \times 10^{-3}$ Pa .cm <sup>3</sup> /s	Passed
2#	$5.9 \times 10^{-4}$ Pa.cm <sup>3</sup> /s	Passed
3#	$6.0 \times 10^{-4}$ Pa.cm <sup>3</sup> /s	Passed
4#	$4.2 \times 10^{-4}$ Pa .cm <sup>3</sup> /s	Passed
5#	$7.0 \times 10^{-4}$ Pa .cm <sup>3</sup> /s	Passed
6#	$4.6 \times 10^{-4}$ Pa .cm <sup>3</sup> /s	Passed
7#	$5.0 \times 10^{-4}$ Pa .cm <sup>3</sup> /s	Passed
8#	$4.0 \times 10^{-4}$ Pa .cm <sup>3</sup> /s	Passed
9#	$3.8 \times 10^{-4}$ Pa .cm <sup>3</sup> /s	Passed
10#	$4.8 \times 10^{-4}$ Pa .cm <sup>3</sup> /s	Passed
11#	$6.0 \times 10^{-4}$ Pa .cm <sup>3</sup> /s	Passed

Compiled      任翔

Checked        魏华

Approved      王静

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**Beijing SWT Optical Communication Technology Co., Ltd.**

**Table 7: Die shear Test**

<b>Product type</b>	PDS143-CFA-C01	<b>Sample size</b>	11 pcs
<b>Temp.</b>	23℃	<b>R.H.</b>	28%
<b>Tester</b>			
<b>According to</b>	MIL-STD-883 Method 2019		
<b>Receipt Date</b>	Dec. 16, 2004	<b>Test Date</b>	Dec. 17, 2004
<b>Test Results</b>	Passed		

**The die shear data sheet between die and substrate**

Sample No.	1	2	3	4	5	6	7	8	9	10	11
<b>Area (m m<sup>2</sup>)</b>	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
<b>Data (×10N)</b>	0.30	0.35	0.30	0.35	0.15	0.80	0.25	0.35	0.35	0.15	0.10
<b>Separation Categories</b>	0	0	0	0	0	0	0	0	0	0	0
<b>Pass criteria (N)</b>	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
<b>Test Results</b>	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

**The die shear data sheet between substrate and header**

Sample No.	1	2	3	4	5	6	7	8	9	10	11
<b>Area (m m<sup>2</sup>)</b>	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
<b>Data (×10N)</b>	7.40	7.65	6.55	5.45	6.25	6.65	6.80	7.70	6.40	7.10	5.50
<b>Separation Categories</b>	4	4	4	4	4	4	4	4	4	4	4
<b>Pass criteria (N)</b>	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
<b>Test Results</b>	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

<b>Remark</b>	(HA-10) Separation categories: 0-- The area of die attach medium remained in package is less than 50% of the die attach area; 1-- The area of die attach medium remained in package is between 10% and 25% of the die attach area; 3-- The area of die attach medium remained in package is less than 10% of the die attach area; 4-- Separation of die from die attach medium; 5-- Separation of die and die attach medium from package; OK – The die can't be moved in the used strength
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Tested by 任京存

Checked by 张素娟

Approved 曾声奎

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**Table 8: Wire bond strength test**

<b>Product type</b>	PDS143-CFA-C01	<b>Sample size</b>	4pcs
<b>Temp.</b>	23℃	<b>R.H.</b>	28%
<b>Tester</b>	DAGE4000		
<b>According to</b>	MIL-STD-883 Method 2011		
<b>Receipt Date</b>	Dec. 16, 2004	<b>Test Date</b>	Dec. 17, 2004
<b>Fine Leak Detection Result</b>	Passed		
<b>Remark</b>	1. Wire material <u>Gold wire</u> , Wire diameter <u>25um</u> , Pass criterion <u><math>3.0 \times 10^{-2} N</math></u> . 2. Wire material <u>Gold wire</u> , Equivalent wire diameter <u>57um</u> , Pass criterion <u><math>8.2 \times 10^{-2} N</math></u>		

**φ25um gold wire bond Strength test data sheet**

Sample No.	1#			2#			3#			4#		
	No	Pull ( $\times 10^{-2} N$ )	Failure Category	No	Pull ( $\times 10^{-2} N$ )	Failure Category	No	Pull ( $\times 10^{-2} N$ )	Detach Mode	No	Pull ( $\times 10^{-2} N$ )	Failure Category
Test Data	1	7.79	2	1	7.81	2	1	7.81	2	1	8.03	2
<b>Result</b>	Passed			Passed			Passed			Passed		

**φ57um Gold Wire Bond Strength Test Data Sheet**

Sample No.	1#			2#			3#			4#		
	No	Pull ( $\times 10^{-2} N$ )	Failure Category	No	Pull ( $\times 10^{-2} N$ )	Failure Category	No	Pull ( $\times 10^{-2} N$ )	Detach Mode	No	Pull ( $\times 10^{-2} N$ )	Failure Category
Test Data	1	17.47	1	1	13.00	1	1	23.13	1	1	12.74	1
	2	15.10	1	2	18.65	1	2	17.56	1	2	13.66	1
<b>Result</b>	Passed			Passed			Passed			Passed		

Tested by 任京存

Checked by 张素娟

Approved 曾声奎

### 3. Endurance test results

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**Table 9 Accelerated APC aging test**

<b>Product type</b>	PDS443-C-C		<b>Sample size</b>	25pcs		
<b>Temp.</b>	85°C		<b>V<sub>Bias</sub></b>	-10V		
<b>Aging Time</b>	5000h		<b>Tester</b>	DGC1001		
<b>According to</b>	Telcordia GR-468-CORE					
<b>Receipt Date</b>	Jan. 5, 2005		<b>Test Date</b>	Jan.6.2005~Aug.3.2005		
<b>Specification</b>						
<b>Parameters</b>	<b>Symb ol</b>	<b>Condition</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
Dark Current	I <sub>D</sub>	Ee=0, V <sub>R</sub> =5V		0.2	0.5	nA
Responsivity	Re	V <sub>R</sub> =5V, λ=1310nm	0.80	0.85		A/W
Breakdown Voltage	V <sub>B</sub>	10μA	40	50		V
Capacitance	C	Ee=0, V <sub>R</sub> =5V, f=1MHz		0.70	1	pF
Return Loss	RL				-40	dB
<b>Test Results</b>	<ol style="list-style-type: none"> <li>1. Please refer to the ‘Record of detector reliability test’ in appendix for all of the test and experiment data.</li> <li>2. The photoelectric parameters of 25pcs PDS443-C-C samples were in specification before and after the 5000 hours accelerate aging test.</li> <li>3. the test evaluation according as: After the accelerate aging test, the photoelectric parameters verifying of the 1 lot photoelectric are all passed.</li> <li>4. Accelerate aging test results: Passed.</li> </ol>					

Compile                    郭志明

Auditing                    熊文敏

Approve                    韩雪梅



**Record of detector reliability test**

NO: 3-1

Test place SWT				Product name: Photoelectricity detector			
Product type: PDS443-C-C				Test date: 2005-1-6			
Test condition Temp. 25°C		R.H. 41%		Test No. 25pcs			
Test state				Before Accelerated APC aging			
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)			result
(Specification)	Id<0.25nA	Re≥0.80A/W	Vb>35V	C<0.70pF			Pass/Fail
SWT-980	0.003	0.91	42	0.70			
SWT-981	0.003	0.90	38	0.70			
SWT-982	0.006	0.93	42	0.63			
SWT-983	0.003	0.91	46	0.63			
SWT-984	0.009	0.91	44	0.63			
SWT-985	0.01	0.92	42	0.65			
SWT-986	0.003	0.92	44	0.64			
SWT-987	0.005	0.91	44	0.63			
SWT-988	0.005	0.92	44	0.65			
SWT-989	0.002	0.92	44	0.65			
SWT-990	0.002	0.91	38	0.66			
SWT-991	0.003	0.91	42	0.66			
SWT-992	0.002	0.92	42	0.66			
SWT-993	0.004	0.91	44	0.63			
SWT-994	0.004	0.92	42	0.66			
SWT-995	0.003	0.92	42	0.65			
SWT-996	0.006	0.92	42	0.67			
SWT-997	0.001	0.89	42	0.67			
SWT-998	0.003	0.93	42	0.67			
SWT-999	0.003	0.93	41	0.67			
SWT-1000	0.003	0.93	42	0.66			
SWT-1001	0.008	0.93	42	0.66			
SWT-1002	0.006	0.91	40	0.65			
SWT-1003	0.002	0.93	42	0.68			
SWT-1004	0.003	0.90	40	0.69			
Remark	Product series: 4022109						
Test by	郭志明			Test date	2005-1-6		
Check by	熊文敏			Test date	2005-1-6		

The information in this document is based on the data on the issued data at the latest. The information is subject to change without notice.



Beijing SWT Optical Communication Technology Co., Ltd.

<b>Test place</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS443-C-C				<b>Test date:</b> 2005-1-27			
<b>Test condition</b> Temp. 25°C		R.H. 42%		<b>Test No.</b> 25pcs			
<b>Test state</b> After Accelerate Aging of 504 hours							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)			result
<b>(Specification)</b>	<b>Id &lt; 0.25nA</b>	<b>Re ≥ 0.80A/W</b>	<b>Vb &gt; 35V</b>	<b>C &lt; 0.70pF</b>			<b>Pass/Fail</b>
SWT-980	0.003	0.91	42	0.70			Pass
SWT-981	0.003	0.90	38	0.70			Pass
SWT-982	0.006	0.93	42	0.63			Pass
SWT-983	0.003	0.91	46	0.63			Pass
SWT-984	0.009	0.91	44	0.63			Pass
SWT-985	0.01	0.92	42	0.65			Pass
SWT-986	0.003	0.92	44	0.64			Pass
SWT-987	0.005	0.91	44	0.63			Pass
SWT-988	0.005	0.92	44	0.65			Pass
SWT-989	0.002	0.92	44	0.65			Pass
SWT-990	0.002	0.91	38	0.66			Pass
SWT-991	0.003	0.91	42	0.66			Pass
SWT-992	0.002	0.92	42	0.66			Pass
SWT-993	0.004	0.91	44	0.63			Pass
SWT-994	0.004	0.92	42	0.66			Pass
SWT-995	0.003	0.92	42	0.65			Pass
SWT-996	0.006	0.92	42	0.67			Pass
SWT-997	0.001	0.89	42	0.67			Pass
SWT-998	0.003	0.93	42	0.67			Pass
SWT-999	0.003	0.93	41	0.67			Pass
SWT-1000	0.003	0.93	42	0.66			Pass
SWT-1001	0.008	0.93	42	0.66			Pass
SWT-1002	0.006	0.91	40	0.65			Pass
SWT-1003	0.002	0.93	42	0.68			Pass
SWT-1004	0.003	0.90	40	0.69			Pass
<b>Remark</b>	Product series: 4022109						
<b>Test by</b> 郭志明				<b>Test date</b>	2005-1-27		
<b>Check by</b> 熊文敏				<b>Test date</b>	2005-1-27		

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**Beijing SWT Optical Communication Technology Co., Ltd.**

<b>Test place</b> SWT					<b>Product name:</b> Photoelectricity detector		
<b>Product type</b> PDS443-C-C					<b>Test date:</b> 2005-2-17		
<b>Test condition</b> Temp. 24 ℃ R.H. 43%					<b>Test No.</b> 25		
<b>Test state After Accelerate Aging of 1008 hours</b>							
<b>Product No.</b>	<b>Dark current (nA)</b>	<b>Responsibility (A/W)</b>	<b>Hit voltage (V)</b>	<b>capacitance (PF)</b>			<b>result</b>
<b>(Specification)</b>	<b>Id &lt; 0.25nA</b>	<b>Re ≥ 0.80A/W</b>	<b>Vb &gt; 35V</b>	<b>C &lt; 0.70pF</b>			<b>Pass/Fail</b>
SWT-980	0.003	0.91	42	0.70			Pass
SWT-981	0.003	0.91	38	0.70			Pass
SWT-982	0.006	0.91	42	0.63			Pass
SWT-983	0.003	0.90	46	0.63			Pass
SWT-984	0.009	0.90	44	0.63			Pass
SWT-985	0.01	0.90	42	0.65			Pass
SWT-986	0.003	0.89	44	0.64			Pass
SWT-987	0.005	0.90	44	0.63			Pass
SWT-988	0.005	0.90	44	0.65			Pass
SWT-989	0.002	0.90	44	0.65			Pass
SWT-990	0.002	0.91	38	0.66			Pass
SWT-991	0.003	0.90	42	0.66			Pass
SWT-992	0.002	0.90	42	0.66			Pass
SWT-993	0.005	0.92	44	0.63			Pass
SWT-994	0.004	0.92	42	0.66			Pass
SWT-995	0.004	0.91	42	0.65			Pass
SWT-996	0.006	0.92	42	0.67			Pass
SWT-997	0.001	0.90	42	0.67			Pass
SWT-998	0.003	0.92	42	0.67			Pass
SWT-999	0.003	0.90	41	0.67			Pass
SWT-1000	0.003	0.92	42	0.66			Pass
SWT-1001	0.008	0.89	42	0.66			Pass
SWT-1002	0.006	0.93	40	0.65			Pass
SWT-1003	0.002	0.94	42	0.68			Pass
SWT-1004	0.003	0.94	40	0.69			Pass
<b>Remark</b>	Product series: 4022109						
<b>Test by</b> 郭志明				<b>Test date</b>	2005-2-17		
<b>Check by</b> 熊文敏				<b>Test date</b>	2005-2-17		

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Beijing SWT Optical Communication Technology Co., Ltd.

<b>Test place</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type</b> PDS443-C-C				<b>Test date:</b> 2005-3-24			
<b>Test condition</b> Temp. 25 °C R.H. 44%				<b>Test No.</b> 25			
<b>Test state</b>				<b>After Accelerate Aging of 1848 hours</b>			
<b>Product No.</b>	<b>Dark current (nA)</b>	<b>Responsibility (A/W)</b>	<b>Hit voltage (V)</b>	<b>capacitance (PF)</b>			<b>result</b>
<b>(Specification)</b>	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>Vb&gt;35V</b>	<b>C&lt;0.70pF</b>			<b>Pass/Fail</b>
SWT-980	0.002	0.92	50	0.70			Pass
SWT-981	0.001	0.92	48	0.69			Pass
SWT-982	0.004	0.91	50	0.67			Pass
SWT-983	0.007	0.92	50	0.67			Pass
SWT-984	0.007	0.90	52	0.65			Pass
SWT-985	0.002	0.93	50	0.70			Pass
SWT-986	0.005	0.92	50	0.62			Pass
SWT-987	0.002	0.90	50	0.61			Pass
SWT-988	0.003	0.92	50	0.65			Pass
SWT-989	0.002	0.89	50	0.66			Pass
SWT-990	0.002	0.93	50	0.69			Pass
SWT-991	0.001	0.92	50	0.66			Pass
SWT-992	0.001	0.93	50	0.66			Pass
SWT-993	0.008	0.93	50	0.62			Pass
SWT-994	0.006	0.93	50	0.65			Pass
SWT-995	0.002	0.90	50	0.68			Pass
SWT-996	0.007	0.92	50	0.66			Pass
SWT-997	0.005	0.90	50	0.63			Pass
SWT-998	0.003	0.91	50	0.63			Pass
SWT-999	0.003	0.90	50	0.64			Pass
SWT-1000	0.003	0.92	42	0.66			Pass
SWT-1001	0.003	0.90	44	0.59			Pass
SWT-1002	0.003	0.93	48	0.66			Pass
SWT-1003	0.002	0.94	50	0.68			Pass
SWT-1004	0.002	0.94	48	0.68			Pass
<b>Remark</b>	Product series: 4022109						
<b>Test by</b> 郭志明				<b>Test date</b>	2005-3-24		
<b>Check by</b> 熊文敏				<b>Test date</b>	2005-3-24		

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<b>Test place</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type</b> PDS443-C-C				<b>Test date:</b> 2005-4-28			
<b>Test condition</b> Temp. 24℃ R.H. 45%				<b>Test No.</b> 25			
<b>Test state</b>				<b>After Accelerate Aging of 2688 hours</b>			
<b>Product No.</b>	<b>Dark current (nA)</b>	<b>Responsibility (A/W)</b>	<b>Hit voltage (V)</b>	<b>capacitance (PF)</b>			<b>result</b>
<b>(Specification)</b>	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>Vb&gt;35V</b>	<b>C&lt;0.70pF</b>			<b>Pass/Fail</b>
SWT-980	0.004	0.91	43	0.65			Pass
SWT-981	0.006	0.92	46	0.64			Pass
SWT-982	0.006	0.92	46	0.65			Pass
SWT-983	0.009	0.92	46	0.66			Pass
SWT-984	0.005	0.92	43	0.63			Pass
SWT-985	0.004	0.93	43	0.63			Pass
SWT-986	0.006	0.90	45	0.64			Pass
SWT-987	0.006	0.90	45	0.65			Pass
SWT-988	0.005	0.93	44	0.64			Pass
SWT-989	0.003	0.92	43	0.64			Pass
SWT-990	0.007	0.91	45	0.65			Pass
SWT-991	0.006	0.93	45	0.64			Pass
SWT-992	0.004	0.89	46	0.64			Pass
SWT-993	0.003	0.90	46	0.64			Pass
SWT-994	0.006	0.91	45	0.65			Pass
SWT-995	0.008	0.91	46	0.65			Pass
SWT-996	0.007	0.93	46	0.66			Pass
SWT-997	0.003	0.93	46	0.66			Pass
SWT-998	0.004	0.91	46	0.65			Pass
SWT-999	0.004	0.92	45	0.63			Pass
SWT-1000	0.004	0.92	46	64			Pass
SWT-1001	0.005	0.94	46	0.64			Pass
SWT-1002	0.003	0.94	45	0.64			Pass
SWT-1003	0.006	0.93	46	0.65			Pass
SWT-1004	0.006	0.94	46	0.66			Pass
<b>Remark</b>	Product series: 4022109						
<b>Test by</b> 郭志明				<b>Test date</b>	2005-4-28		
<b>Check by</b> 熊文敏				<b>Test date</b>	2005-4-28		

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Beijing SWT Optical Communication Technology Co., Ltd.

<b>Test place</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type</b> PDS443-C-C				<b>Test date:</b> 2005-6-2			
<b>Test condition</b> Temp. 25℃ R.H. 48%				<b>Test No.</b> 25			
<b>Test state After Accelerate Aging of 3528hours</b>							
<b>Product No.</b>	<b>Dark current (nA)</b>	<b>Responsibility (A/W)</b>	<b>Hit voltage (V)</b>	<b>capacitance (PF)</b>			<b>result</b>
<b>(Specification)</b>	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>Vb&gt;35V</b>	<b>C&lt;0.70pF</b>			<b>Pass/Fail</b>
SWT-980	0.004	0.89	40	0.62			Pass
SWT-981	0.005	0.91	42	0.62			Pass
SWT-982	0.006	0.91	42	0.63			Pass
SWT-983	0.006	0.89	44	0.59			Pass
SWT-984	0.006	0.88	44	0.60			Pass
SWT-985	0.005	0.90	44	0.66			Pass
SWT-986	0.004	0.89	45	0.57			Pass
SWT-987	0.013	0.88	44	0.58			Pass
SWT-988	0.002	0.90	44	0.63			Pass
SWT-989	0.005	0.90	42	0.62			Pass
SWT-990	0.007	0.88	40	0.64			Pass
SWT-991	0.002	0.88	42	0.60			Pass
SWT-992	0.005	0.88	44	0.63			Pass
SWT-993	0.007	0.90	45	0.58			Pass
SWT-994	0.004	0.88	42	0.63			Pass
SWT-995	0.007	0.90	44	0.62			Pass
SWT-996	0.003	0.90	42	0.62			Pass
SWT-997	0.004	0.88	44	0.62			Pass
SWT-998	0.006	0.92	42	0.61			Pass
SWT-999	0.008	0.92	40	0.61			Pass
SWT-1000	0.006	0.91	44	0.64			Pass
SWT-1001	0.005	0.88	40	0.66			Pass
SWT-1002	0.006	0.88	40	0.64			Pass
SWT-1003	0.006	0.91	40	0.63			Pass
SWT-1004	0.007	0.92	40	0.64			Pass
<b>Remark</b>	Product series: 4022109						
<b>Test by</b> 郭志明				<b>Test date</b>	2005-6-2		
<b>Check by</b> 熊文敏				<b>Test date</b>	2005-6-2		

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**Beijing SWT Optical Communication Technology Co., Ltd.**

<b>Test place</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type</b> PDS443-C-C				<b>Test date:</b> 2005-7-7			
<b>Test condition</b> Temp. 26℃ R.H. 50%				<b>Test No.</b> 25			
<b>Test state After Accelerate Aging of 4368hours</b>							
<b>Product No.</b>	<b>Dark current (nA)</b>	<b>Responsibility (A/W)</b>	<b>Hit voltage (V)</b>	<b>capacitance (PF)</b>			<b>result</b>
<b>(Specification)</b>	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>Vb&gt;35V</b>	<b>C&lt;0.70pF</b>			<b>Pass/Fail</b>
SWT-980	0.009	0.93	47	0.71			Pass
SWT-981	0.01	0.93	51	0.73			Pass
SWT-982	0.01	0.92	51	0.72			Pass
SWT-983	0.01	0.92	53	0.73			Pass
SWT-984	0.01	0.90	53	0.68			Pass
SWT-985	0.01	0.93	50	0.70			Pass
SWT-986	0.01	0.92	53	0.68			Pass
SWT-987	0.009	0.90	53	0.7			Pass
SWT-988	0.009	0.92	52	0.72			Pass
SWT-989	0.006	0.89	51	0.74			Pass
SWT-990	0.01	0.93	47	0.73			Pass
SWT-991	0.009	0.92	52	0.68			Pass
SWT-992	0.008	0.93	52	0.71			Pass
SWT-993	0.01	0.92	54	0.70			Pass
SWT-994	0.01	0.92	52	0.74			Pass
SWT-995	0.008	0.91	52	0.73			Pass
SWT-996	0.008	0.92	50	0.70			Pass
SWT-997	0.009	0.90	52	0.72			Pass
SWT-998	0.009	0.92	51	0.70			Pass
SWT-999	0.01	0.90	51	0.73			Pass
SWT-1000	0.007	0.92	53	0.73			Pass
SWT-1001	0.007	0.89	47	0.74			Pass
SWT-1002	0.009	0.93	50	0.73			Pass
SWT-1003	0.009	0.94	52	0.70			Pass
SWT-1004	0.006	0.94	50	0.73			Pass
<b>Remark</b>	Product series: 4022109						
<b>Test by</b> 郭志明				<b>Test date</b>	2005-7-7		
<b>Check by</b> 熊文敏				<b>Test date</b>	2005-7-7		

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<b>Test place</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type</b> PDS443-C-C				<b>Test date:</b> 2005-8-3			
<b>Test condition</b> Temp. 22℃ R.H. 55%				<b>Test No.</b> 25			
<b>Test state After Accelerate Aging of 5000hours</b>							
<b>Product No.</b>	<b>Dark current (nA)</b>	<b>Responsibility (A/W)</b>	<b>Hit voltage (V)</b>	<b>capacitance (PF)</b>			<b>result</b>
<b>(Specification)</b>	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>Vb&gt;35V</b>	<b>C&lt;0.70pF</b>			<b>Pass/Fail</b>
SWT-980	0.007	0.92	50	0.69			Pass
SWT-981	0.007	0.91	54	0.67			Pass
SWT-982	0.01	0.93	54	0.67			Pass
SWT-983	0.01	0.91	56	0.65			Pass
SWT-984	0.009	0.91	55	0.64			Pass
SWT-985	0.01	0.94	53	0.67			Pass
SWT-986	0.01	0.92	56	0.61			Pass
SWT-987	0.007	0.91	56	0.64			Pass
SWT-988	0.01	0.93	55	0.64			Pass
SWT-989	0.008	0.92	54	0.63			Pass
SWT-990	0.007	0.91	50	0.64			Pass
SWT-991	0.008	0.91	55	0.61			Pass
SWT-992	0.01	0.92	56	0.67			Pass
SWT-993	0.007	0.90	56	0.61			Pass
SWT-994	0.007	0.93	54	0.65			Pass
SWT-995	0.007	0.92	54	0.67			Pass
SWT-996	0.01	0.92	54	0.67			Pass
SWT-997	0.009	0.89	56	0.67			Pass
SWT-998	0.01	0.93	54	0.67			Pass
SWT-999	0.01	0.93	54	0.64			Pass
SWT-1000	0.01	0.93	56	0.64			Pass
SWT-1001	0.009	0.94	50	0.70			Pass
SWT-1002	0.008	0.91	53	0.63			Pass
SWT-1003	0.007	0.93	54	0.64			Pass
SWT-1004	0.007	0.90	52	0.70			Pass
<b>Remark</b>	Product series: 4022109						
<b>Test by</b> 郭志明				<b>Test date</b>	2005-8-3		
<b>Check by</b> 熊文敏				<b>Test date</b>	2005-8-3		

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**Table 10: High temp storage Test**

<b>Product type</b>	PDS143-CFA-C01		<b>Sample size</b>	11pcs		
<b>Temp.</b>	85℃		<b>Aging Time</b>	2000h		
<b>Tester</b>	CS101-3EBN Dryness Box					
<b>According to</b>	Telcordia GR-468-CORE					
<b>Receipt Date</b>	Jan. 4, 2005		<b>Test Date</b>	Jan.4.2005~Mar.28 .2005		
<b>Specification</b>						
<b>Parameters</b>	<b>Symb ol</b>	<b>Condition</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
Dark Current	I <sub>D</sub>	E <sub>e</sub> =0, V <sub>R</sub> =5V		0.2	0.5	nA
Responsivity	Re	V <sub>R</sub> =5V, λ=1310nm	0.80	0.85		A/W
Breakdown Voltage	V <sub>B</sub>	10μA	40	50		V
Capacitance	C	E <sub>e</sub> =0, V <sub>R</sub> =5V, f=1MHz		0.70	1	pF
Return Loss	RL				-40	dB
<b>Test Results</b>	<p>1. Please refer to the ‘Record of detector reliability test’ in appendix for all of the test and experiment data.</p> <p>2. The photoelectric parameters of 11pcs PDS143-CFA samples were in specification before and after the 2000 hours accelerate aging test.</p> <p>3. The test evaluation according as: After the High Temp. Storage test, the photoelectric parameters verifying of the photoelectric sample are all passed.</p> <p>4. High Temp. Storage test results: Passed</p>					

Compile                    熊文敏

Auditing                    余水林

Approve                    韩雪梅



**Record of detector reliability test**

NO: 3-2

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-C01				<b>Test date:</b> 2005-1-4			
<b>Test condition:</b> Temp.: 23 °C R.H.: 40 %				<b>Test No.:</b> 11 pcs			
<b>Test state</b> Before High Temp. Storage							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	result
Specification	Id<0.25nA	Re≥0.80A/W	V <sub>b</sub> >35V	C≤0.75pF	R <sub>L</sub> ≤-40dB	≤-75dBc	Pass/Fail
SWT-W0029710	0.003	0.81	52	0.83	-41.9	-83.89	
SWT-W0029697	0.003	0.8	56	0.76	-54.0	-78.65	
SWT-W0029694	0.05	0.85	52	0.81	-58.0	-77.08	
SWT-W0029699	0.004	0.83	46	0.86	-48.0	-84.64	
SWT-W0029698	0.006	0.82	50	0.80	-49.2	-80.84	
SWT-W0029700	0.005	0.82	56	0.80	-51.0	-84.25	
SWT-W0029702	0.007	0.85	54	0.85	-54.0	-85.87	
SWT-W0029701	0.004	0.82	50	0.80	-47.0	-80.34	
SWT-W0029709	0.005	0.82	52	0.84	-44.0	-85.55	
SWT-W0029696	0.05	0.83	52	0.80	-48.2	-79.60	
SWT-W0029695	0.003	0.82	52	0.76	-58.0	-78.00	

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-C01				<b>Test date:</b> 2005-1-25			
<b>Test condition:</b> Temp.: 22 °C R.H.: 42 %				<b>Test No.:</b> 11 pcs			
<b>Test state</b> After High Temp. Storage test data of 3 week							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	result
Specification	Id<0.25nA	Re≥0.80A/W	V <sub>b</sub> >35V	C≤0.75pF	R <sub>L</sub> ≤-40dB	≤-75dBc	Pass/Fail
SWT-W0029710	0.04	0.83	45	0.65	46.2		pass
SWT-W0029697	0.04	0.8	50	0.6	48.3		pass
SWT-W0029694	0.04	0.86	48	0.64	53.2		pass
SWT-W0029699	0.04	0.8	42	0.66	54.0		pass
SWT-W0029698	0.04	0.86	48	0.6	54.0		pass
SWT-W0029700	0.04	0.87	46	0.62	47.5		pass
SWT-W0029702	0.04	0.86	46	0.64	46.8		pass
SWT-W0029701	0.04	0.88	46	0.67	54.9		pass
SWT-W0029709	0.04	0.87	46	0.67	58.0		pass
SWT-W0029696	0.04	0.87	48	0.64	61.0		pass
SWT-W0029695	0.04	0.81	50	0.61	52.8		pass

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<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-C01				<b>Test date:</b> 2005-2-28			
<b>Test condition:</b> Temp.: 22 °C R.H.: 42 %				<b>Test No.:</b> 11			
<b>Test state</b> After High Temp. Storage test data of 8 week							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	result
Specification	Id<0.25nA	Re≥0.80A/W	V <sub>b</sub> >35V	C≤0.75pF	R <sub>L</sub> ≤-40dB	≤-75dBc	Pass/Fail
SWT-W0029710	0.007	0.83	42	0.63	<-40		pass
SWT-W0029697	0.005	0.89	42	0.58	<-40		pass
SWT-W0029694	0.005	0.82	42	0.63	<-40		pass
SWT-W0029699	0.008	0.81	44	0.70	<-40		pass
SWT-W0029698	0.004	0.86	44	0.60	<-40		pass
SWT-W0029700	0.006	0.80	46	0.59	<-40		pass
SWT-W0029702	0.009	0.84	44	0.63	<-40		pass
SWT-W0029701	0.006	0.85	46	0.62	<-40		pass
SWT-W0029709	0.005	0.87	44	0.63	<-40		pass
SWT-W0029696	0.007	0.85	46	0.63	<-40		pass
SWT-W0029695	0.009	0.82	40	0.69	<-40		pass
<b>Test place:</b> SWT							
<b>Product type:</b> PDS143-CFA-C01				<b>Product name:</b> Photoelectricity detector			
<b>Test condition:</b> Temp.: 24 °C R.H.: 36 %				<b>Test date:</b> 2005-3-21			
				<b>Test No.:</b> 11			
<b>Test state</b> After High Temp. Storage test data of 11 week							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	result
Specification	Id<0.25nA	Re≥0.80A/W	V <sub>b</sub> >35V	C≤0.75pF	R <sub>L</sub> ≤-40dB	≤-75dBc	Pass/Fail
SWT-W0029710	0.004	0.86	52	0.65	<-40		pass
SWT-W0029697	0.003	0.82	58	0.64	<-40		pass
SWT-W0029694	0.002	0.87	54	0.65	<-40		pass
SWT-W0029699	0.002	0.85	50	0.69	<-40		pass
SWT-W0029698	0.007	0.84	54	0.60	<-40		pass
SWT-W0029700	0.003	0.87	54	0.62	<-40		pass
SWT-W0029702	0.003	0.85	54	0.68	<-40		pass
SWT-W0029701	0.005	0.85	54	0.65	<-40		pass
SWT-W0029709	0.006	0.84	54	0.66	<-40		pass
SWT-W0029696	0.05	0.84	56	0.66	<-40		pass
SWT-W0029695	0.05	0.84	60	0.67	<-40		pass

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<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-C01				<b>Test date:</b> 2005-3-28			
<b>Test condition:</b> Temp.: 24 °C R.H.: 36 %				<b>Test No.:</b> 11			
<b>Test state</b> After High Temp. Storage test data of 12 week							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	result
<b>Specification</b>	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>V<sub>b</sub>&gt;35V</b>	<b>C≤0.75pF</b>	<b>R<sub>L</sub>≤-40dB</b>	<b>≤-75dBc</b>	<b>Pass/Fail</b>
SWT-W0029710	0.002	0.90	56	0.64	<-40	-76.94	Pass
SWT-W0029697	0.01	0.86	55	0.61	<-40	-80.21	Pass
SWT-W0029694	0.005	0.91	54	0.62	<-40	-78.92	Pass
SWT-W0029699	0.003	0.87	54	0.62	<-40	-84.82	Pass
SWT-W0029698	0.007	0.87	56	0.64	<-40	-81.92	Pass
SWT-W0029700	0.004	0.90	54	0.60	<-40	-80.70	Pass
SWT-W0029702	0.002	0.88	54	0.62	<-40	-84.34	Pass
SWT-W0029701	0.002	0.90	56	0.63	<-40	-76.94	Pass
SWT-W0029709	0.006	0.90	55	0.61	<-40	-84.76	Pass
SWT-W0029696	0.003	0.91	56	0.61	<-40	-77.54	Pass
SWT-W0029695	0.007	0.87	56	0.64	<-40	-79.27	Pass
<b>Test by</b> 郭志明				<b>Test date</b> 2005-3-28			
<b>Check by</b> 熊文敏				<b>Test date</b> 2005-3-28			

The information in this document is based on the data on the issued data at the latest. The information is subject to change without notice.



**Table 11: Low temp storage Test**

<b>Product type</b>	PDS143-CFA-B01		<b>Sample size</b>	11pcs		
<b>Temp.</b>	-40℃		<b>Aging Time</b>	2000h		
<b>Tester</b>	CS101-3EBN Dryness Box					
<b>According to</b>	Telcordia GR-468-CORE					
<b>Receipt Date</b>	Aug. 10, 2005		<b>Test Date</b>	Aug.11.2005~Nov.3.2005		
<b>Specification</b>						
<b>Parameters</b>	<b>Symb ol</b>	<b>Condition</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
Dark Current	I <sub>D</sub>	Ee=0, V <sub>R</sub> =5V		0.2	0.5	nA
Responsivity	Re	V <sub>R</sub> =5V, λ=1310nm	0.80	0.85		A/W
Breakdown Voltage	V <sub>B</sub>	10μA	40	50		V
Capacitance	C	Ee=0, V <sub>R</sub> =5V, f=1MHz		0.70	1	pF
Return Loss	RL				-40	dB
<b>Test Results</b>	<ol style="list-style-type: none"> <li>1. Please refer to the 'Record of detector reliability test' in appendix for all of the test and experiment data.</li> <li>2. The photoelectric parameters of 11pcs PDS143-CFA-B01 samples were in specification before and after the 2000 hours Low Temp. Storage test.</li> <li>3. Low Temp. Storage test results: Passed</li> </ol>					

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**Record of detector reliability test**

NO: 3-3

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-B01				<b>Test date:</b> 2005-8-11			
<b>Test condition:</b> Temp. 25 °C R.H.: 46%				<b>Test No.:</b> 11			
<b>Test state:</b> Before Low Temp. Storage							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	result
Specification	Id<0.25nA	Re≥0.80A/W	V <sub>b</sub> >35V	C≤0.75pF	R <sub>L</sub> ≤-40dB	≤-75dBc	Pass/Fail
SWT- 0030774	0.001	0.87	62	0.69	-57		
SWT- 0030773	0.008	0.89	64	0.66	-57		
SWT- 0030775	0.010	0.89	64	0.65	-51		
SWT- 0031153	0.010	0.87	62	0.66	-49		
SWT- 0031149	0.009	0.88	62	0.69	-57		
SWT- 0031151	0.008	0.87	62	0.71	-54		
SWT-W0031148	0.006	0.91	60	0.68	-45		
SWT-W003146	0.008	0.91	60	0.69	-47		
SWT-W003147	0.009	0.87	60	0.68	-44		
SWT-W0031145	0.007	0.91	58	0.68	-49		
SWT-W0031154	0.010	0.89	60	0.72	-51		
<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-B01				<b>Test date:</b> 2005-11-3			
<b>Test condition:</b> Temp. 23 °C R.H.: 41%				<b>Test No.:</b> 11			
<b>Test state:</b> After Low Temp. Storage							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	result
Specification	Id<0.25nA	Re≥0.80A/W	V <sub>b</sub> >35V	C≤0.75pF	R <sub>L</sub> ≤-40dB	≤-75dBc	Pass/Fail
SWT- 0030774	0.010	0.92	49	0.67	-52		pass
SWT- 0030773	0.09	0.93	50	0.64	-52		pass
SWT- 0030775	0.010	0.95	50	0.62	-54		pass
SWT- 0031153	0.010	0.92	65	0.69	-54		pass
SWT- 0031149	0.010	0.92	64	0.68	-51		pass
SWT- 0031151	0.010	0.91	65	0.69	-51		pass
SWT-W0031148	0.008	0.93	62	0.67	-45		pass
SWT-W003146	0.009	0.96	63	0.65	-48		pass
SWT-W003147	0.008	0.94	64	0.67	-57		pass
SWT-W0031145	0.010	0.94	60	0.68	-57		pass
SWT-W0031154	0.009	0.92	63	0.63	-51		pass
<b>Test by</b> 郭志明				<b>date</b> 2005.11.3			
<b>Test principal</b> 熊文敏				<b>date</b> 2005.11.3			

The information in this document is based on the data on the issued data at the latest. The information is subject to change without notice.



Table 12: Temperature cycling Test

<b>Product type</b>	PDS143-CFA-B0501		<b>Sample size</b>	11pcs		
<b>Temp.</b>	-40℃~+85℃		<b>Frequency</b>	15min/cycle		
<b>Tester</b>	WGD 7025A Cyc box and Dryness box		<b>Cycling Times</b>	100 Cycles		
<b>According to</b>	Telcordia GR-468-CORE Section9.12					
<b>Receipt Date</b>	Jun. 21, 2005		<b>Test Date</b>	Jun.21.2005~Jun.24.2005		
<b>Specification</b>						
<b>Parameters</b>	<b>Symb ol</b>	<b>Condition</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
Dark Current	I <sub>D</sub>	Ee=0, V <sub>R</sub> =5V		0.2	0.5	nA
Responsivity	Re	V <sub>R</sub> =5V, λ=1310nm	0.80	0.9		A/W
Breakdown Voltage	V <sub>B</sub>	10μA	40	50		V
Capacitance	C	Ee=0, V <sub>R</sub> =5V, f=1MHz		0.70	1	pF
Return Loss	RL				-40	dB
<b>Test Results</b>	<ol style="list-style-type: none"> <li>1、 Please refer to the ‘Record of detector reliability test’ in appendix for all of the test and experiment data.</li> <li>2、 The visual checking of 11pcs samples was passed before and after the temperature cycling test.</li> <li>3、 The photoelectric parameters were in specification before and after the temperature cycling test.</li> <li>4、 After the temperature cycling test, the visual checking and the photoelectric parameters verifying of the detector samples are all passed.</li> <li>5、 Temperature cycling test results: Passed.</li> </ol>					

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Beijing SWT Optical Communication Technology Co., Ltd.

**Record of detector reliability test**

NO: 3-4

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-B0501				<b>Test date:</b> 05-06-21			
<b>Test condition:</b> Temp. 24 °C R.H. 36 %				<b>Test No.:</b> 11			
<b>Test state:</b> Before Temperature Cycling							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	VF (V)	result
Specification	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>V<sub>b</sub>&gt;35V</b>	<b>C≤0.75pF</b>	<b>R<sub>L</sub>≤-40dB</b>	<b>≤0.65V</b>	<b>Pass/Fail</b>
1	0.008	0.86	63	0.66	-52	0.52	
2	0.006	0.85	64	0.62	-51	0.53	
3	0.011	0.86	65	0.63	-57	0.52	
4	0.003	0.87	64	0.60	-49	0.54	
5	0.005	0.86	66	0.62	-52	0.54	
6	0.003	0.85	66	0.61	-49	0.54	
7	0.008	0.88	64	0.61	-56	0.54	
8	0.003	0.87	58	0.62	-54	0.52	
9	0.012	0.85	63	0.61	-51	0.53	
10	0.005	0.86	64	0.63	-51	0.52	
11	0.006	0.84	63	0.63	-51	0.51	
<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS143-CFA-B0501				<b>Test date:</b> 2005-06-24			
<b>Test condition:</b> Temp. 24 °C R.H. 36 %				<b>Test No.:</b> 11			
<b>Test state:</b> After Temperature Cycling							
Product No.	Dark current (nA)	Responsibility (A/W)	Hit voltage (V)	capacitance (PF)	Return loss (dB)	IMD2 (dB)	result
Specification	<b>Id&lt;0.25nA</b>	<b>Re≥0.80A/W</b>	<b>V<sub>b</sub>&gt;35V</b>	<b>C≤0.75pF</b>	<b>R<sub>L</sub>≤-40dB</b>	<b>≤-75dBc</b>	<b>Pass/Fail</b>
1	0.016	0.85	64	0.67	-52	0.52	pass
2	0.006	0.85	66	0.62	-50	0.53	pass
3	0.010	0.85	63	0.63	-57	0.52	pass
4	0.005	0.87	64	0.60	-48	0.52	pass
5	0.013	0.86	65	0.63	-52	0.54	pass
6	0.010	0.85	66	0.61	-50	0.54	pass
7	0.024	0.87	64	0.60	-57	0.53	pass
8	0.004	0.87	56	0.62	-54	0.52	pass
9	0.017	0.85	63	0.62	-52	0.54	pass
10	0.011	0.86	64	0.63	-52	0.52	pass
11	0.012	0.85	64	0.64	-51	0.52	pass
<b>Test by</b> 郭志明				<b>date</b> 2005.06.24			
<b>Test principal</b> 熊文敏				<b>date</b> 2005.06.24			

The information in this document is based on the data on the issued data at the latest. The information is subject to change without notice.



Table 13: Damp Heat Test

<b>Product type</b>	PDS443-C		<b>Sample size</b>	11pcs		
<b>Temp.</b>	+85°C		<b>Damp</b>	85% R.H		
<b>Tester</b>	ESL-KA02 Damp Heat Box		<b>Times</b>	1000h		
<b>According to</b>	MIL-STD-202 Method 103					
<b>Receipt Date</b>	Jun. 21, 2005		<b>Test Date</b>	Dec.28.2005~Feb. 7.2005		
<b>Specification</b>						
<b>Parameters</b>	<b>Symb ol</b>	<b>Condition</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
Dark Current	I <sub>D</sub>	Ee=0, V <sub>R</sub> =5V		0.2	2	nA
Responsivity	Re	V <sub>R</sub> =5V, λ=1310nm	0.85	0.85		A/W
Breakdown Voltage	V <sub>B</sub>	10μA	35			V
Capacitance	C	Ee=0, V <sub>R</sub> =5V, f=1MHz			0.75	pF
<b>Test Results</b>	<p>1. Please refer to the 'Record of detector reliability test' in appendix for all of the test and experiment data.</p> <p>2. The photoelectric parameters of 11pcs PDS443-C samples were in specification before and after the 1000 hours Damp Heat test.</p> <p>3. Damp Heat test results: Passed</p>					

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**Beijing SWT Optical Communication Technology Co., Ltd.**

**Record of detector reliability test**

NO: 3-5

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS443-C				<b>Test date:</b> 2005-12-28			
<b>Test condition:</b> Temp.23 °C R.H. 41%				<b>Test No.:</b> 11			
<b>Test state:</b> Before Damp Heat							
Product No.	Dark current (nA)	Responsibility (A/W)	voltage (V)	Hit voltage (PF)	capacitance (dB)	(Pa.m3/s)	result
(Specification)	Id<2	Re≥0.85	Vf<0.65	VB>35	C<0.75	<5*10 <sup>-9</sup>	Pass/Fail
1	0.017	0.900	0.600	64.000	0.620	0*10 <sup>-10</sup>	Pass
2	0.013	0.930	0.590	63.000	0.630	0*10 <sup>-10</sup>	Pass
3	0.018	0.910	0.600	64.000	0.640	0*10 <sup>-10</sup>	Pass
4	0.013	0.920	0.610	65.000	0.620	0*10 <sup>-10</sup>	Pass
5	0.017	0.900	0.590	63.000	0.640	0*10 <sup>-10</sup>	Pass
6	0.017	0.920	0.580	62.000	0.640	0*10 <sup>-10</sup>	Pass
7	0.017	0.910	0.600	62.000	0.610	0*10 <sup>-10</sup>	Pass
8	0.015	0.932	0.580	63.000	0.630	0*10 <sup>-10</sup>	Pass
9	0.017	0.930	0.580	63.000	0.640	0*10 <sup>-10</sup>	Pass
10	0.018	0.910	0.580	62.000	0.630	0*10 <sup>-10</sup>	Pass
11	0.013	0.920	0.600	64.000	0.620	0*10 <sup>-10</sup>	Pass

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS443-C				<b>Test date:</b> 2006-1-4			
<b>Test condition:</b> Temp.23 °C R.H. 41%				<b>Test No.:</b> 11			
<b>Test state:</b> After Damp Heat of 168 hours							
Product No.	Dark current (nA)	Responsibility (A/W)	voltage (V)	Hit voltage (V)	capacitance (PF)	(Pa.m3/s)	result
(Specification)	Id<2nA	Re≥0.85A/W	V F < 0.65V	VB>35V	C<0.75pF	<5*10 <sup>-9</sup> Pa	Pass/Fail
1	0.090	0.920	0.550	60.000	0.630	0.2*10 <sup>-9</sup>	Pass
2	0.040	0.910	0.550	61.000	0.630	0.3*10 <sup>-10</sup>	Pass
3	0.020	0.930	0.550	62.000	0.610	1.2*10 <sup>-10</sup>	Pass
4	0.100	0.930	0.570	65.000	0.600	0*10 <sup>-10</sup>	Pass
5	0.010	0.920	0.560	62.000	0.630	0*10 <sup>-10</sup>	Pass
6	0.130	0.900	0.560	62.000	0.620	0*10 <sup>-10</sup>	Pass
7	0.090	0.920	0.560	62.000	0.610	0*10 <sup>-10</sup>	Pass
8	0.070	0.910	0.550	62.000	0.620	0*10 <sup>-10</sup>	Pass
9	0.060	0.900	0.550	62.000	0.630	0*10 <sup>-10</sup>	Pass
10	0.050	0.920	0.550	62.000	0.620	0*10 <sup>-10</sup>	Pass
11	0.010	0.900	0.560	63.000	0.610	0*10 <sup>-10</sup>	Pass

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<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS443-C				<b>Test date:</b> 2006-1-14			
<b>Test condition:</b> Temp.23 °C R.H. 41%				<b>Test No.:</b> 11			
<b>Test state:</b> After Damp Heat of 408hours							
Product No.	Dark current (nA)	Responsibility (A/W)	voltage (V)	Hit voltage (PF)	capacitance (dB)	(Pa.m3/s)	result
<b>(Specification)</b>	<b>Id&lt;2</b>	<b>Re≥0.85</b>	<b>Vf&lt;0.65</b>	<b>VB&gt;35</b>	<b>C&lt;0.75</b>	<b>&lt;5*10<sup>-9</sup></b>	<b>Pass/Fail</b>
1	0.140	0.910	0.540	60.000	0.630	未检	Pass
2	0.040	0.900	0.530	60.000	0.630	未检	Pass
3	0.040	0.850	0.550	62.000	0.610	未检	Pass
4	0.200	0.910	0.550	62.000	0.590	未检	Pass
5	0.080	0.920	0.550	60.000	0.620	未检	Pass
6	0.170	0.870	0.560	60.000	0.620	未检	Pass
7	0.100	0.910	0.560	60.000	0.600	未检	Pass
8	0.260	0.890	0.550	60.000	0.610	未检	Pass
9	0.130	0.870	0.550	60.000	0.620	未检	Pass
10	0.190	0.910	0.540	60.000	0.620	未检	Pass
11	0.020	0.900	0.550	62.000	0.600	未检	Pass
<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS443-C				<b>Test date:</b> 2006-1-21			
<b>Test condition:</b> Temp.23 °C R.H. 41%				<b>Test No.:</b> 11			
<b>Test state:</b> After Damp Heat of 576 hours							
Product No.	Dark current (nA)	Responsibility (A/W)	voltage (V)	Hit voltage (V)	capacitance (PF)	(Pa.m3/s)	result
<b>(Specification)</b>	<b>Id&lt;2nA</b>	<b>Re≥0.85A/W</b>	<b>V F &lt; 0.65V</b>	<b>VB&gt;35V</b>	<b>C&lt;0.75pF</b>	<b>&lt;5*10<sup>-9</sup>Pa</b>	<b>Pass/Fail</b>
1	0.150	0.930	0.560	60.000	0.630	4.1*10 <sup>-10</sup>	Pass
2	0.030	0.930	0.590	60.000	0.620	1.7*10 <sup>-10</sup>	Pass
3	0.040	0.930	0.580	61.000	0.610	4.0*10 <sup>-10</sup>	Pass
4	0.140	0.930	0.590	62.000	0.590	0.0*10 <sup>-10</sup>	Pass
5	0.070	0.930	0.580	60.000	0.610	0.0*10 <sup>-10</sup>	Pass
6	0.140	0.940	0.580	59.000	0.620	0.0*10 <sup>-10</sup>	Pass
7	0.110	0.920	0.580	60.000	0.580	0.0*10 <sup>-10</sup>	Pass
8	0.250	0.930	0.580	60.000	0.590	0.0*10 <sup>-10</sup>	Pass
9	0.090	0.930	0.590	60.000	0.620	0.0*10 <sup>-10</sup>	Pass
10	0.200	0.910	0.590	60.000	0.610	0.0*10 <sup>-10</sup>	Pass
11	0.020	0.900	0.590	61.000	0.600	0.0*10 <sup>-10</sup>	Pass

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**Beijing SWT Optical Communication Technology Co., Ltd.**

<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS443-C				<b>Test date:</b> 2006-1-28			
<b>Test condition:</b> Temp.22℃ R.H. 40%				<b>Test No.:</b> 11			
<b>Test state:</b> After Damp Heat of 744 hours							
Product No.	Dark current (nA)	Responsibility (A/W)	voltage (V)	Hit voltage (PF)	capacitance (dB)	((Pa.m3/s)	result
<b>(Specification)</b>	<b>Id&lt;2</b>	<b>Re≥0.85</b>	<b>Vf&lt;0.65</b>	<b>VB&gt;35</b>	<b>C&lt;0.75</b>	<b>&lt;5*10<sup>-9</sup></b>	<b>Pass/Fail</b>
1	0.060	0.920	0.560	60.000	0.630	未检	Pass
2	0.040	0.930	0.580	60.000	0.630	未检	Pass
3	0.040	0.920	0.580	61.000	0.600	未检	Pass
4	0.070	0.940	0.580	62.000	0.600	未检	Pass
5	0.030	0.930	0.580	60.000	0.600	未检	Pass
6	0.070	0.930	0.590	59.000	0.620	未检	Pass
7	0.040	0.930	0.580	60.000	0.590	未检	Pass
8	0.130	0.930	0.580	60.000	0.590	未检	Pass
9	0.060	0.930	0.580	60.000	0.630	未检	Pass
10	0.150	0.900	0.590	60.000	0.610	未检	Pass
11	0.015	0.910	0.590	61.000	0.610	未检	Pass
<b>Test place:</b> SWT				<b>Product name:</b> Photoelectricity detector			
<b>Product type:</b> PDS443-C				<b>Test date:</b> 2006-2-07			
<b>Test condition:</b> Temp.21℃ R.H. 42%				<b>Test No.:</b> 11			
<b>Test state:</b> After Damp Heat of 1008 hours							
Product No.	Dark current (nA)	Responsibility (A/W)	voltage (V)	Hit voltage (V)	capacitance (PF)	(Pa.m3/s)	result
<b>(Specification)</b>	<b>Id&lt;2nA</b>	<b>Re≥0.85A/W</b>	<b>V F &lt; 0.65V</b>	<b>VB&gt;35V</b>	<b>C&lt;0.75pF</b>	<b>&lt;5*10<sup>-9</sup>Pa</b>	<b>Pass/Fail</b>
1	0.120	0.910	0.580	58.000	0.630	8.3*10 <sup>-10</sup>	Pass
2	0.110	0.920	0.630	58.000	0.630	7.0*10 <sup>-10</sup>	Pass
3	0.130	0.900	0.600	60.000	0.620	7.6*10 <sup>-10</sup>	Pass
4	0.050	0.930	0.580	62.000	0.620	6.2*10 <sup>-10</sup>	Pass
5	0.040	0.920	0.580	60.000	0.650	4.5*10 <sup>-10</sup>	Pass
6	0.080	0.930	0.580	60.000	0.640	5.9*10 <sup>-10</sup>	Pass
7	0.130	0.910	0.610	60.000	0.600	5.9*10 <sup>-10</sup>	Pass
8	0.190	0.920	0.580	60.000	0.620	4.9*10 <sup>-10</sup>	Pass
9	0.060	0.930	0.580	60.000	0.630	4.6*10 <sup>-10</sup>	Pass
10	0.230	0.900	0.580	60.000	0.630	3.8*10 <sup>-10</sup>	Pass
11	0.020	0.910	0.580	61.000	0.620	1.5*10 <sup>-10</sup>	Pass
<b>Test by</b>	郭志明			<b>date</b>	2006.2.07		
<b>Test principal</b>	熊文敏			<b>date</b>	2006.2.07		

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