



**Fraunhofer**

**TESTED<sup>®</sup>  
DEVICE**

Taiyo Cabletec Corp.  
EXT-3D M120292827  
**Report No. TA 2112-1285**

Statement of  
Qualification

Single product  
Particle Emission

Customer	TAIYO CABLETEC CORPORATION Meijiyasuda Life Osaka-umeda Bldg.21F 3-3-20 Umeda Kita-ku Osaka 530-0001 Japan	Test result / Classification	When operated under the specified test conditions, the cable EXT-3D M120292827 is suitable for use in cleanrooms fulfilling the specifications of the following Air Cleanliness Classes according to ISO 14644-1:
Component tested			
Category:	Energy Supply		
Subcategory:	Cable Systems		
Product name:	EXT-3D M120292827 (manufacturing date: 11/2020; color: dark blue; serial number: M120292827)		
Random sampling of particle emissions (airborne) at representative sites			
Standards/Guidelines:	ISO 14644-1, -14 The norms stated generally refer to the version valid at the time of the tests.		
Test devices:	Optical particle counter: LasAir II 110 and LasAir III 110 with measuring ranges $\geq 0.1\text{ }\mu\text{m}$ , $\geq 0.2\text{ }\mu\text{m}$ , $\geq 0.3\text{ }\mu\text{m}$ , $\geq 0.5\text{ }\mu\text{m}$ , $\geq 1.0\text{ }\mu\text{m}$ and $\geq 5.0\text{ }\mu\text{m}$		
Test environment parameters:	<ul style="list-style-type: none"><li>Cleanroom Air Cleanliness Class (according to ISO 14644-1):..... ISO 1</li><li>Airflow velocity:.....0.45 m/s</li><li>Airflow pattern:..... vertical laminar flow</li><li>Temperature: .....22 °C <math>\pm</math> 0.5 °C</li><li>Relative humidity: ..... 45 % <math>\pm</math> 5 %</li></ul>		
Test procedure parameters:	<ul style="list-style-type: none"><li>Energy chain: ..... Igus E61.29.02.150</li><li>Chain bending radius: .....r = 150 mm</li><li>Stroke length:..... s = 820 mm</li><li>Parameter Set 1:.....v<sub>1</sub> = 0.5 m/s; a<sub>1</sub> = 1.0 m/s<sup>2</sup></li><li>Parameter Set 2:.....v<sub>2</sub> = 1.0 m/s; a<sub>2</sub> = 2.0 m/s<sup>2</sup></li><li>Parameter Set 3:.....v<sub>3</sub> = 2.0 m/s; a<sub>3</sub> = 4.0 m/s<sup>2</sup></li></ul>		
		The measuring devices used for the qualification tests are calibrated at regular intervals; their results can be traced back to national and international standards. In cases where no national standards exist, the test procedure implemented complies with the technical regulations and norms applicable at the time of the test. The relevant documentation can be viewed on request at any time.	
		Detailed information and parameters of the test environment can be found in the Fraunhofer IPA test report.	

Test parameter(s)	Air Cleanlines Class
v <sub>1</sub> = 0.5 m/s; a <sub>1</sub> = 1.0 m/s <sup>2</sup>	1
v <sub>2</sub> = 1.0 m/s; a <sub>2</sub> = 2.0 m/s <sup>2</sup>	1
v <sub>3</sub> = 2.0 m/s; a <sub>3</sub> = 4.0 m/s <sup>2</sup>	1
Overall result	1

Please note: Transport damages, incorrect installation, aging behavior, etc. can influence the test result.