



QUANTA LABORATORIES

3199 De La Cruz Boulevard • Santa Clara, CA 95054-2483

TEL: (408) 988-0770

FAX: (408) 988-0762

E-MAIL: test@quantalabs.com

Certificate of Conformance

This is to certify that the results from the test(s) requested by

Viavi Solutions Inc. are on file under

Quanta Laboratories Job No. QL-18-1291 and conform

to the specification(s) stated in P.O. No. 280040190

These results apply to the following equipment and are available for review upon request.

Model No: MicroNIR OnSite-W

S/N: See Data Sheet

*** Shock & Vibration Tests (8 Units) ***

*** Water (IPX5 & X7) Ingress Tests (2 Units) ***

*** Dust (IP6X) Ingress Test (1 Unit) ***



Manis Delos Reyes
Quanta Laboratories

Manis Delos Reyes
Quanta Laboratories

11/14/2018
Date

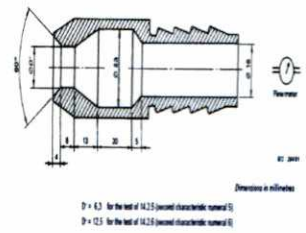
WATER INGRESS TEST DATA



3199 De La Cruz Blvd, Santa Clara, CA 95054
 Phone: (408) 988-0770 FAX: (408) 988-0762
 test@quantalabs.com www.quantalabs.com

CLIENT: Viavi Solutions Inc.	P.O. NO: 280040190
SPECIMEN: MicroNIR OnSite-W (Qty: 1)	JOB NO: QL-18-1291
SPECIFICATION: Per IEC 60529 IPX5 Specification	PAGE 1 OF 1

DATE	S/N	NO.	ORIENTATION	WATER TO UNIT DISTANCE	DURATION	REMARKS
11/05/18	Spray Test	1	12.5 LPM ± 5% or 3.3 GPM ± 5%	2.5 m to 3 m	Minimum of 1 min/m ² Duration: 3 min	<p>Water jet nozzle 6.3mm diameter</p> <p>Test completed to specification requirements.</p> <p>Note: No ingress observed into unit enclosure.</p>



TEST ENGINEER: Larissa Clark	DATE: 11-05-2018
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lh

Viavi Solutions Inc.
Water Ingress (IPX5) Test

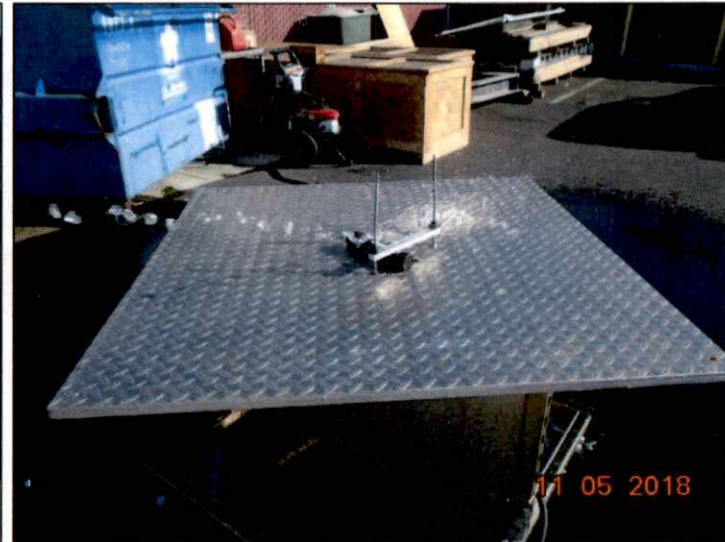
Unit Setup



**Flow rate of
12.5 L/min \pm 5%**



Viavi Solutions Inc.
Water Ingress (IPX5) Test

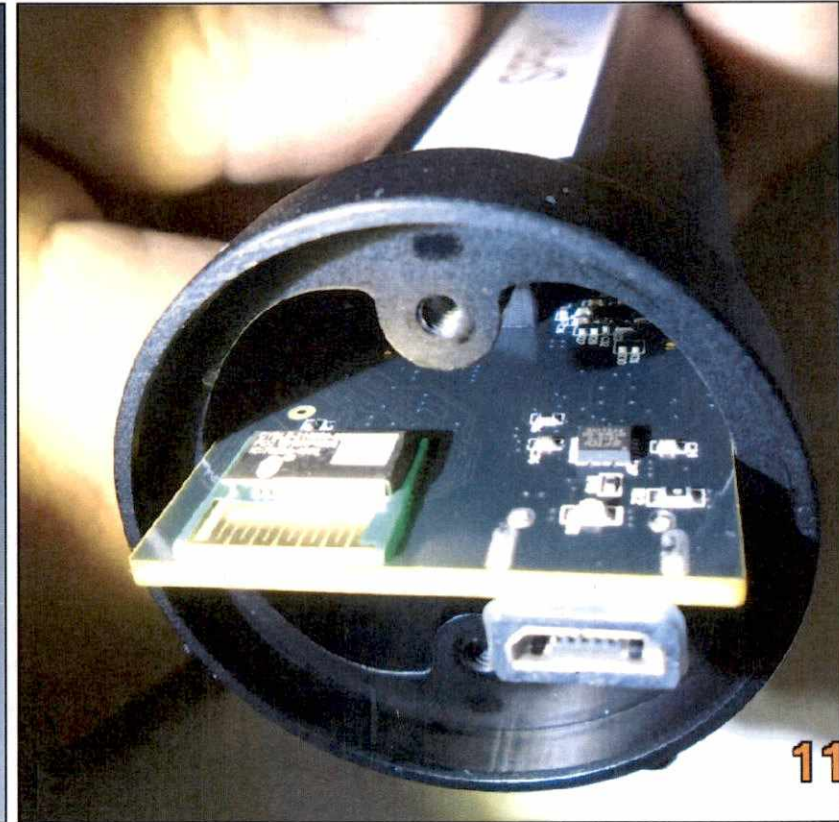
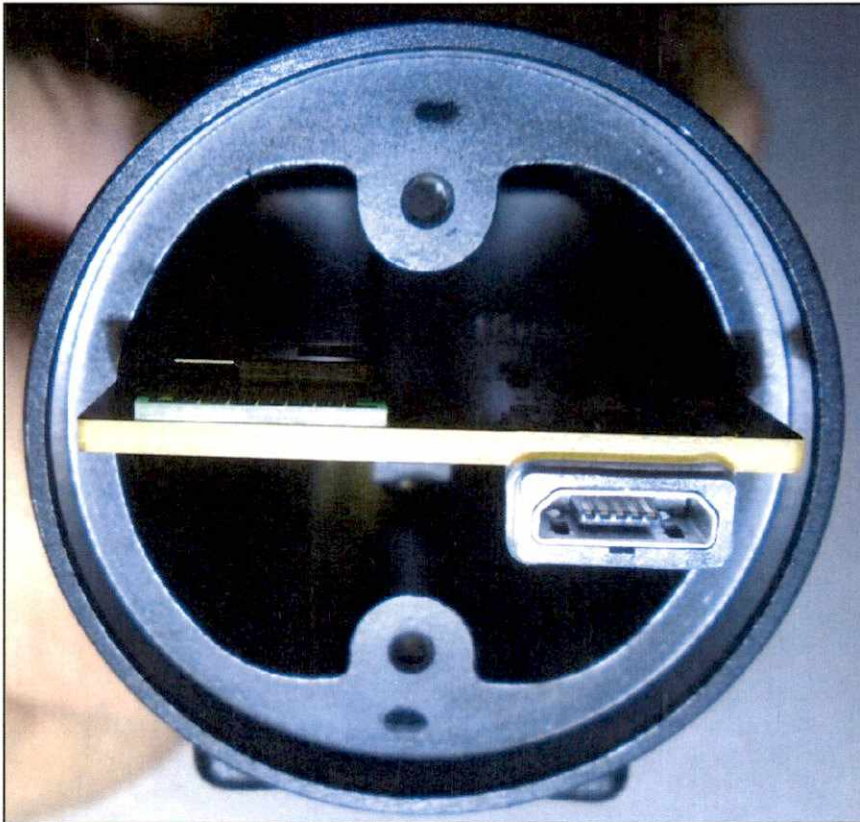


During Test

Viavi Solutions Inc.
Water Ingress (IPX5) Test



Viavi Solutions Inc.
Water Ingress (IPX5) Test

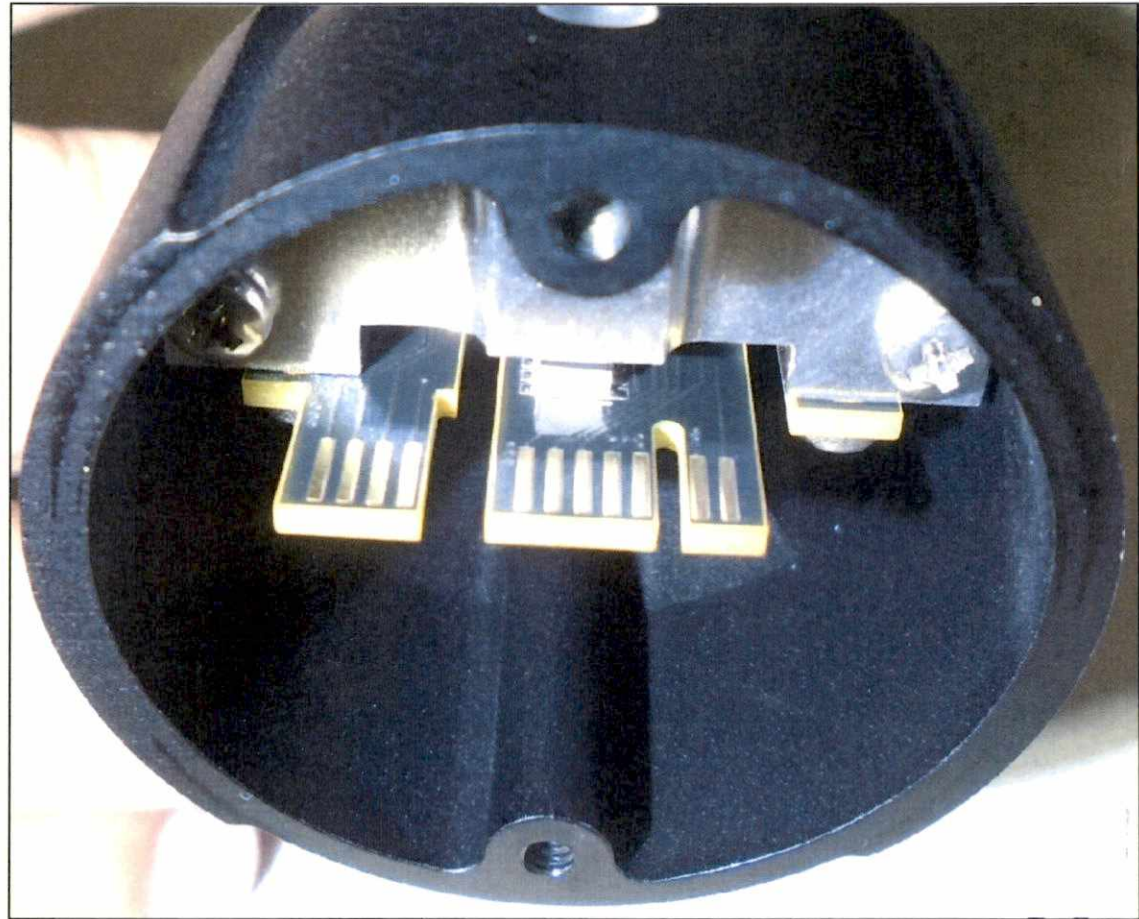
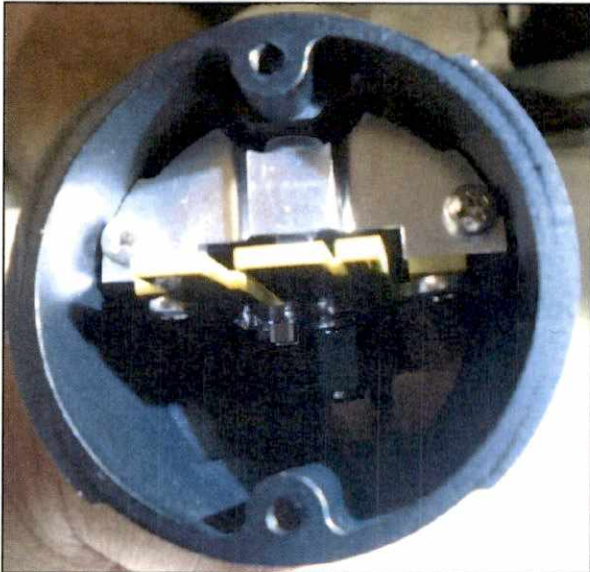
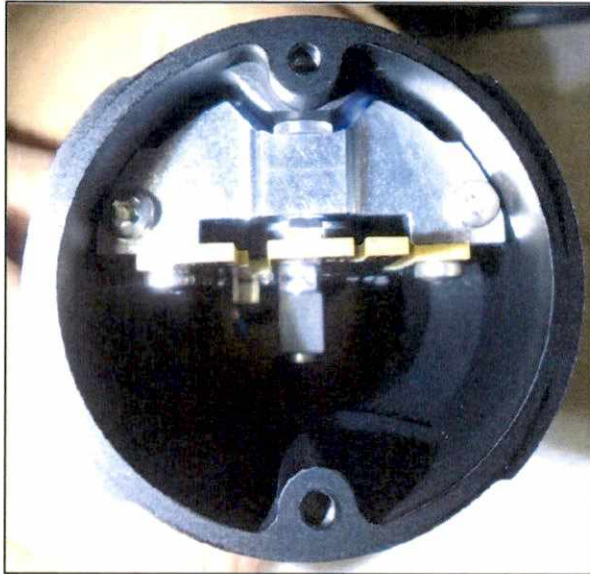


After test: back interior



After test: inside front cover

Viavi Solutions Inc.
Water Ingress (IPX5) Test



Job No. : QL-18-1291

After test: front interior

11-06-2018

WATER INGRESS TEST DATA



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CLIENT: Viavi Solutions Inc.				P.O. NO: 280040190	
SPECIMEN: MicroNIR OnSite-W (Qty: 1)				JOB NO: QL-18-1291	
SPECIFICATION: Per IEC 60529 IPX7 Specification				PAGE 1 OF 1	
DATE	S/N	NO.	TEST MEANS	DURATION	REMARKS
11/05/18	Dunk Test	1	Immersion tank Water-level on enclosure: 1 m above bottom	DURATION: 30 min	Test completed to specification requirements. NOTE: No ingress observed into unit enclosure.
TEST ENGINEER: Larissa Clark				DATE: 11-05-2018	

A handwritten signature in black ink, appearing to be "Lh", is written over the bottom right portion of the form.

Viavi Solutions Inc.
Water Ingress (IPX7) Test

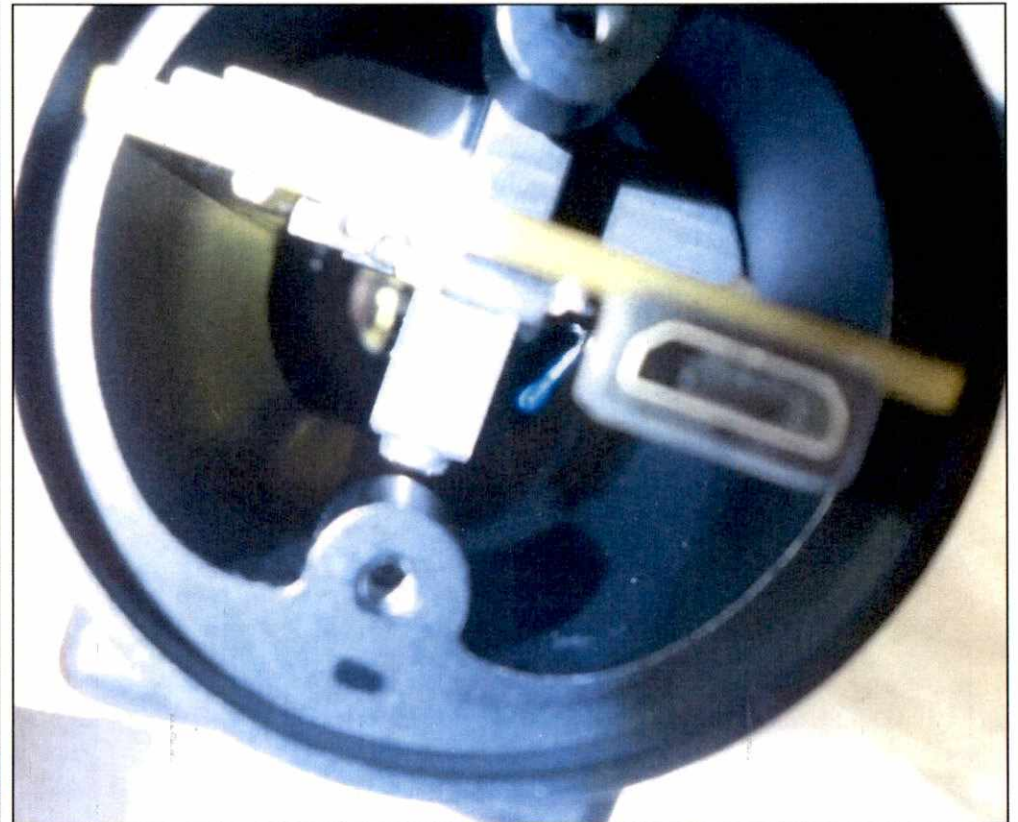


Viavi Solutions Inc.
Water Ingress (IPX7) Test



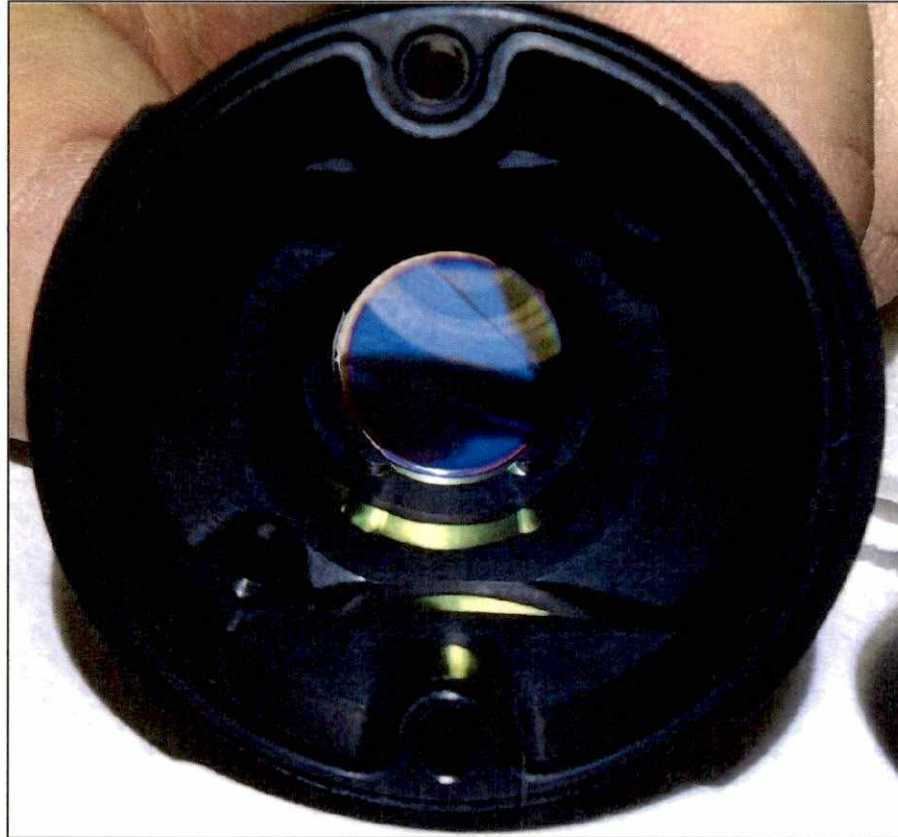
After test: back of unit

Viavi Solutions Inc.
Water Ingress (IPX7) Test



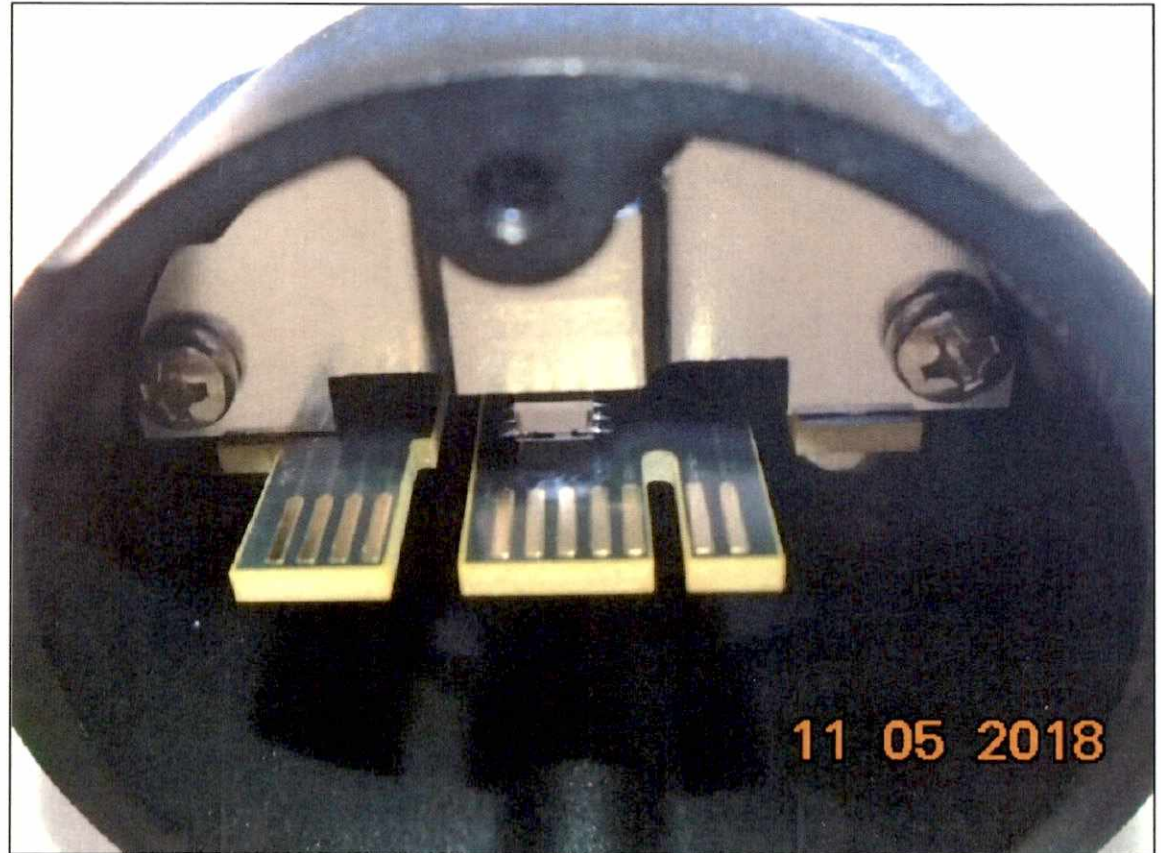
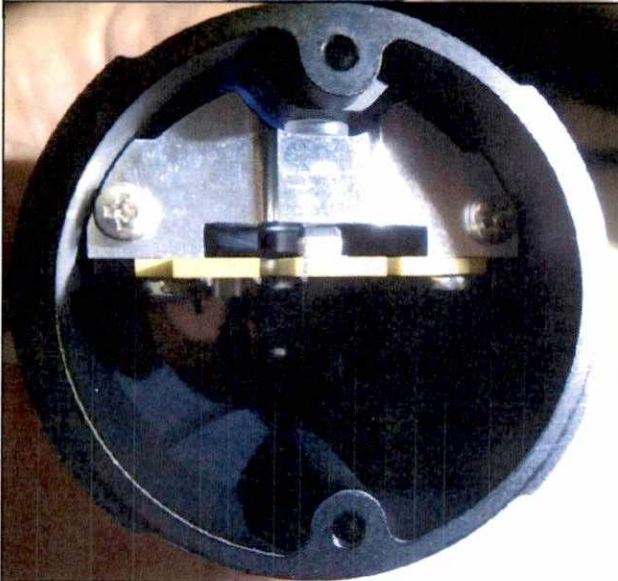
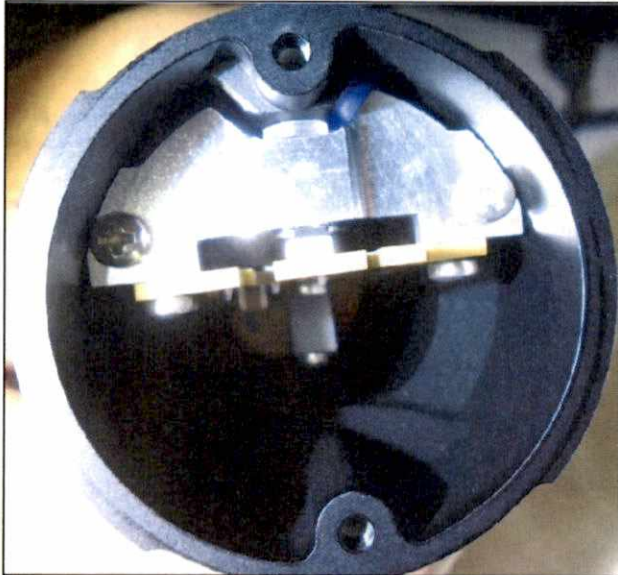
After test: back interior

Viavi Solutions Inc.
Water Ingress (IPX7) Test



After test: inside front cover

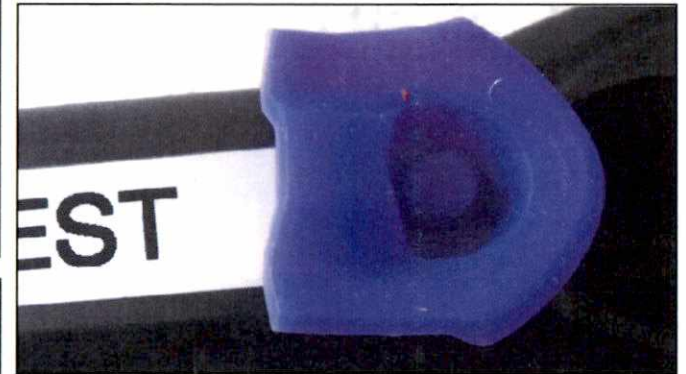
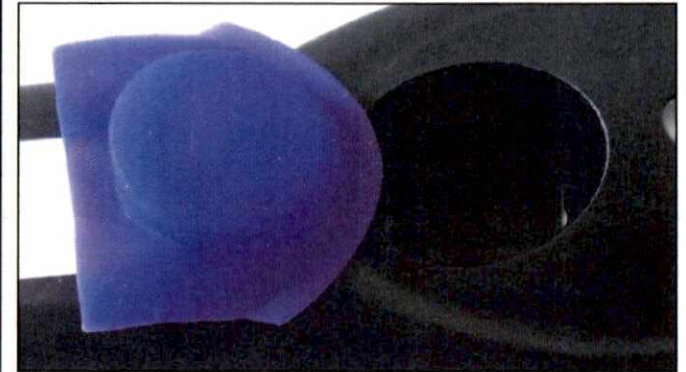
Viavi Solutions Inc.
Water Ingress (IPX7) Test



Job No. : QL-18-1291

After test: front interior

11-05-2018



After test: interior components and ON/OFF switch

EQUIPMENT LIST FOR WATER INGRESS TEST



3199 De La Cruz Blvd, Santa Clara, CA 95054
 Phone: (408) 988-0770 FAX: (408) 988-0762
 test@quantalabs.com www.quantalabs.com

CLIENT: Viavi Solutions Inc.			P.O. No.: 280040190		
			JOB NO: QL-18-1291		
MFGR	DESCRIPTION	FLOW RATE/ RANGE	SERIAL NO.	ASSET NO.	CALIBRATION DUE DATE
QUANTA	WATER INGRESS CART	N/A	Q006	QL-0495	TIME OF TEST
QUANTA	IPX5 SPRAY NOZZLE	6.3mmØ 12.5 l/min	N/A	QL-0502	TIME OF TEST
OMEGA	FLOW METER FTB691A-NPT-1/2"	1 -10 GPM	KF2449	QL-0493	01/26/2019
QUANTA	WATER IMMERSION TANK	1.0 - 1.5 METER	N/A	QL-1056	N/A

Notes:

1. All Calibrations have been performed using standards having an accuracy traceable to NIST or derived from acceptable values of natural physical constants and complies with ISO-17025 and A2LA requirements.
2. Measurement uncertainty are calculated using a confidence level of 95% with a coverage factor of 2 (K = 2).

DUST INGRESS TEST DATA



3199 De La Cruz Blvd, Santa Clara, CA 95054
 Phone: (408) 988-0770 FAX: (408) 988-0762
 test@quantalabs.com www.quantalabs.com

CLIENT: Viavi Solutions Inc.					P.O. NO: 280040190	
SPECIMEN: MicroNIR OnSite-W (Qty: 1)					JOB NO: QL-18-1291	
SPECIFICATION: Per IEC60529 IP6X Specification				CATEGORY 1	<input checked="" type="checkbox"/>	PAGE 1 OF 1
				CATEGORY 2	<input type="checkbox"/>	
DATE	S/N	TIME	TEMP.	DUST CONCENTRATION	REMARKS	
11/05/18	Dust Test	8 hrs	35°C	2kg/m ³	<p style="text-align: center;">Test completed to specification requirements.</p> <p>NOTE:</p> <ul style="list-style-type: none"> Pressure inside unit enclosure was maintained by a vacuum pump connected to unit at a depression rate of 2kPa (20 mbar) as compared to surrounding atmospheric pressure (refer to IEC60529 Spec.). After test, no deposit of dust/talcum powder observed inside unit enclosure. Potential ingress entry points included ingress barriers at front, back, and ON/OFF button. Particles that appear in pictures were not consistent with dust ingress. Similar particles were observed in interior of water test unit. Vacuum test fixture showed slight ingress and was not part of test result. Unit passed IPX7 (water test) prior to IP6X (dust test). Hence, unit complies with IP67. 	
TEST ENGINEER: Larissa Clark					<i>LR</i>	DATE: 11-06-2018

Viavi Solutions Inc.
Dust Ingress (IP6X) Test



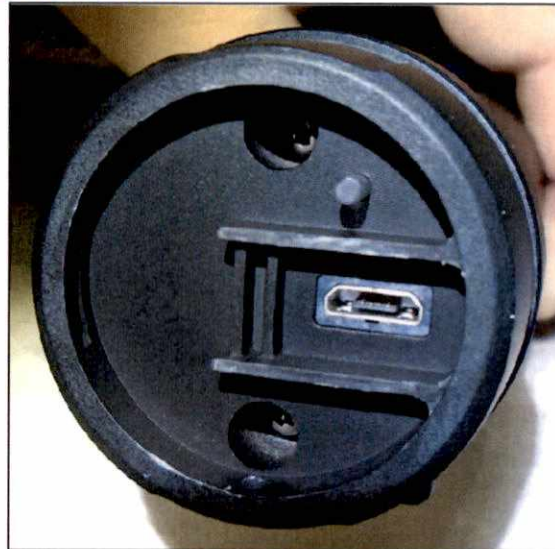
Unit in Chamber #46 before dust exposure

Viavi Solutions Inc.
Dust Ingress (IP6X) Test



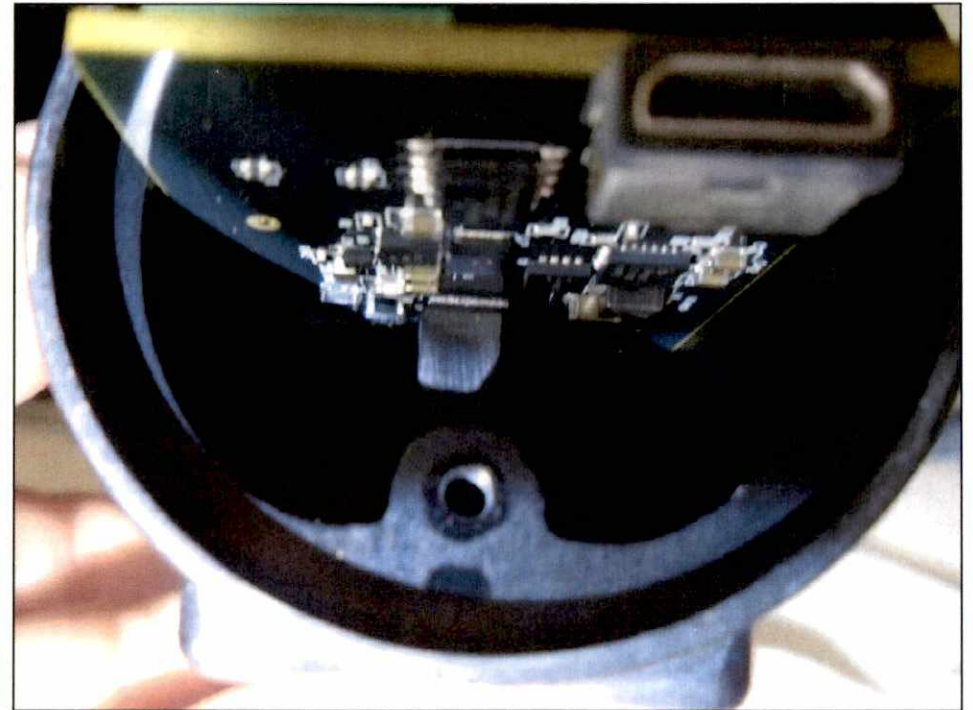
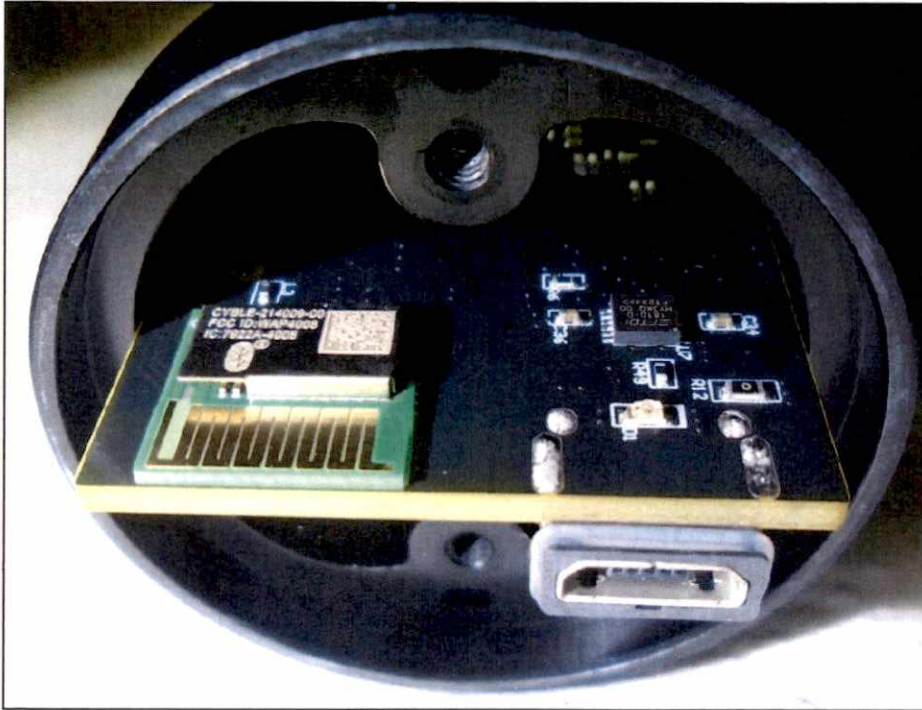
After dust exposure and after wiping off dust

Viavi Solutions Inc.
Dust Ingress (6X) Test



After test: back of unit

Viavi Solutions Inc.
Dust Ingress (6X) Test



After test: back interior

Viavi Solutions Inc.
Dust Ingress (6X) Test



After test: interior components and ON/OFF switch

Viavi Solutions Inc.
Dust Ingress (6X) Test



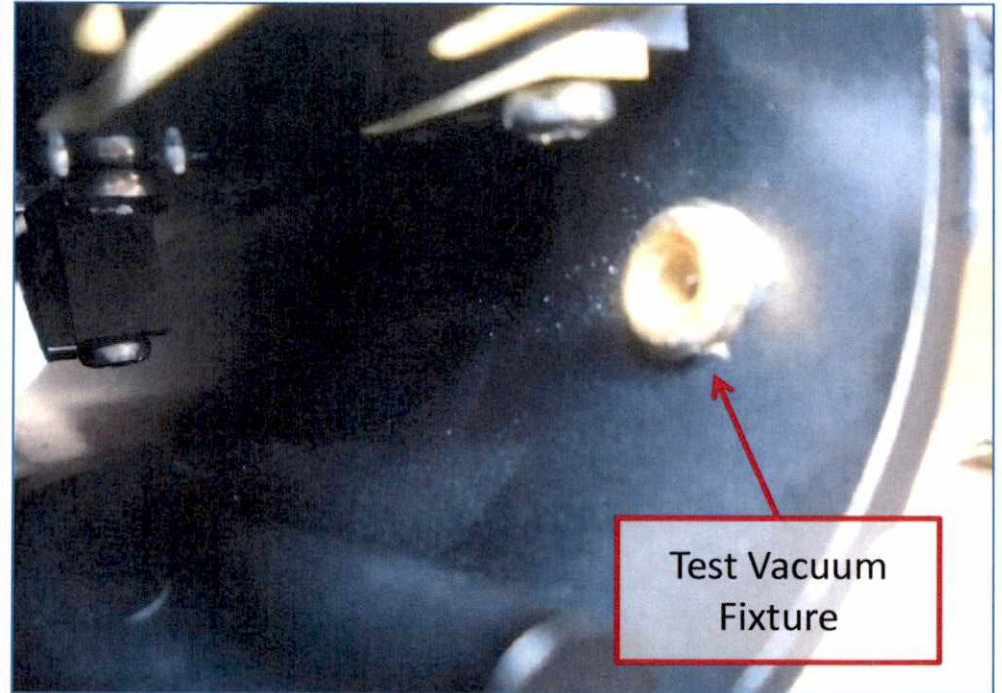
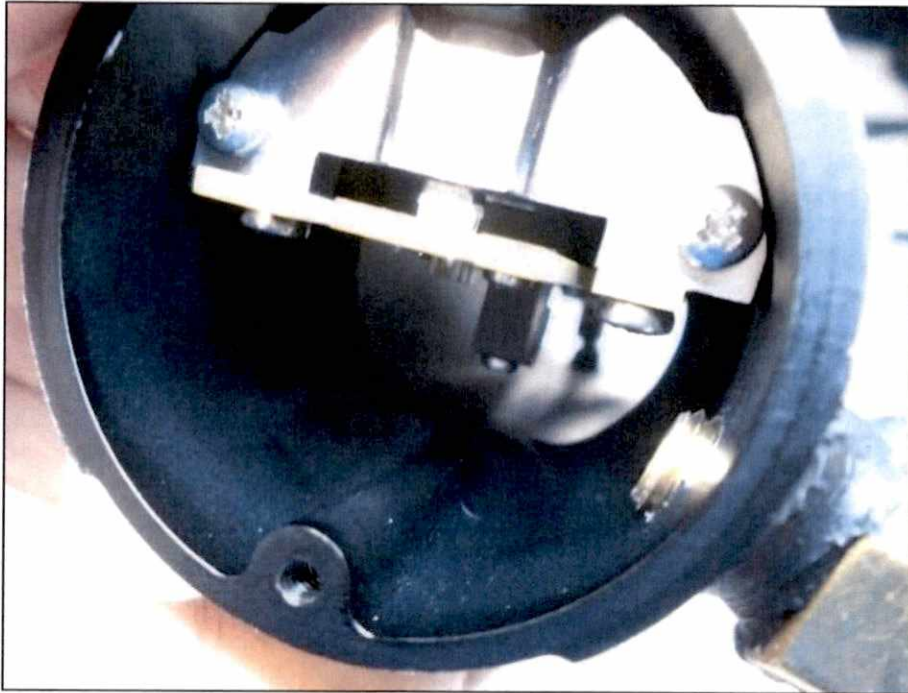
After test: front of unit

Viavi Solutions Inc.
Dust Ingress (6X) Test



After test: front interior

Viavi Solutions Inc.
Dust Ingress (6X) Test



After test: front interior

EQUIPMENT LIST FOR INGRESS/INTRUSION TEST



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 test@quantalabs.com www.quantalabs.com

CLIENT: Viavi Solutions Inc.			P.O. No.: 280040190		
			JOB NO: QL-18-1291		
MFGR	DESCRIPTION	RANGE	SERIAL NO.	ASSET NO.	CALIBRATION DUE DATE
WUXI NANYA SCI-TECH CO., LTD.	DUST CHAMBER #46	N/A	G90060	QL-0862	TIME OF TEST
CHENGFENG FLOWMETER	AIR FLOWMETER	0.25 ~ 2.5 m3/Hr	4000118	QL-0863	REFERENCE
DWYER INSTRUMENT	LIQUID FILLED MANOMETER	0 ~ 304.8 mmH2O	2662409	QL-1071	08/30/2021
KULITE SEMICONDUCTOR	PRESSURE TRANSDUCER	0 ~ 50 PSIA	8003028	QL-0865	REFERENCE

Notes:

1. All Calibrations have been performed using standards having an accuracy traceable to NIST or derived from acceptable values of natural physical constants and complies with ISO-17025 and A2LA requirements.
2. Measurement uncertainty are calculated using a confidence level of 95% with a coverage factor of 2 (K = 2).

SINE SWEEP VIBRATION TEST DATA



3199 De La Cruz Blvd, Santa Clara, CA 95054
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 test@quantalabs.com www.quantalabs.com

CLIENT: Viavi Solutions Inc .	P.O. NO: 280040190
SPECIMEN: MicroNIR OnSite-W (8 units)	JOB NO: QL-18-1291
SPECIFICATION: Client's Specification	PAGE 1 OF 1

DATE	S/N	AXIS	FREQUENCIES & LEVELS	REMARKS
11-06-18	MI-0000105	X	Sine Sweep Vibration Test : 5 Hz @ 0.5 G 15 Hz – 2000 Hz @ 1.5 G Sweep Rate: 30 min / sweep cycle Total: One sweep cycle Duration: 30 Min/Axis	Operational test Test completed to the specification requirements.
	MI-0000106	Y		
	MI-0000107			
	MI-0000108			
	MI-0000109			
	MI-0000110			
	MI-0000111			
	MI-0000112			
				See Photos Page

TEST ENGINEER: Lian Sun	<i>GS</i>	DATE: 11-06-2018
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RANDOM VIBRATION TEST DATA



3199 De La Cruz Blvd, Santa Clara, CA 95054
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 test@quantalabs.com www.quantalabs.com

CLIENT: Viavi Solutions Inc.		P.O. NO: 280040190		
SPECIMEN: MicroNIR OnSite-W (8 units)		JOB NO: QL-18-1291		
SPECIFICATION: Client's Specification		PAGE 1 OF 1		
DATE	S/N	AXIS	FREQUENCIES & LEVELS	REMARKS
11/06/18	MI-0000105	Z	<u>Random Vibration</u> 5-300 Hz @ 0.00233 G ² /Hz Total: 1.0 Grms Duration: 30 minutes/axis	<u>Operational Test</u> Test completed to specification requirements
	MI-0000106			
	MI-0000107			
	MI-0000108			
	MI-0000109			
	MI-0000110			
	MI-0000111			
	MI-0000112			
				DEFINITION OF AXES See photo page
TEST ENGINEER: Lian Sun				DATE: 11/06/2018

SHOCK TEST DATA



3199 De La Cruz Blvd, Santa Clara, CA 95054
 Phone: (408) 988-0770 FAX: (408) 988-0762
 test@quantalabs.com www.quantalabs.com

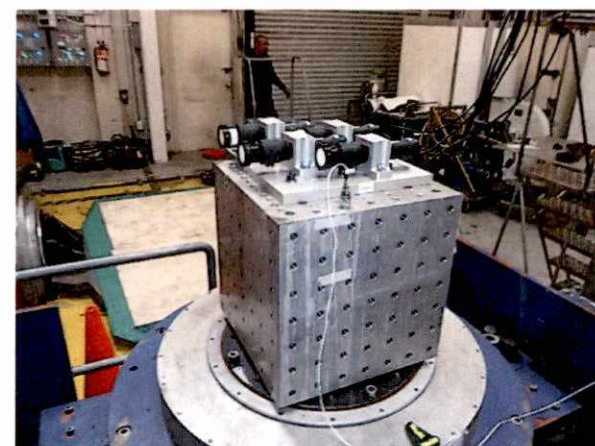
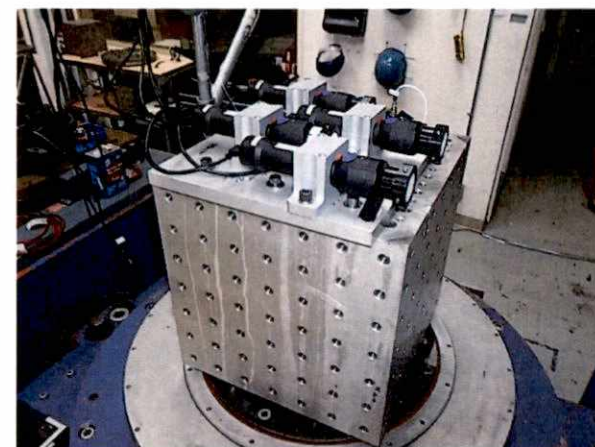
CLIENT: Viavi Solutions Inc.				P.O. NO: 280040190						
SPECIMEN: MicroNIR OnSite-W (8 units)				JOB NO: QL-18-1291						
SPECIFICATION: Client's Specification		WAVE FORM: Half Sine Wave		PAGE 1 OF 1						
DATE	S/N	Orientation	LEVEL (G)	DURATION(MS)	NO. OF SHOCK	REMARKS				
11-05-18	MI-0000105 MI-0000106 MI-0000107 MI-0000108 MI-0000109 MI-0000110 MI-0000111 MI-0000112	+X	Half Sine Wave Shock: 40G , 10 ms 3 Shocks/Direction Total: 30 Shocks		3	Operational test. Test completed to the specification requirements.				
		-X			3					
		+Y			3					
		-Y			3					
		+Z			3		DEFINITION OF AXES See Photos Page			
		-Z			3					
		TEST ENGINEER: LIAN SUN					DATE: 11-05-2018			

SHOCK TEST DATA



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CLIENT: Viavi Solutions Inc.				P.O. NO: 280040190					
SPECIMEN: MicroNIR OnSite-W (8 units)				JOB NO: QL-18-1291					
SPECIFICATION: Client's Specification		WAVE FORM: Half Sine Wave		PAGE 1 OF 1					
DATE	S/N	Orientation	LEVEL (G)	DURATION(MS)	NO. OF SHOCK	REMARKS			
11-05-18	MI-0000105 MI-0000106 MI-0000107 MI-0000108 MI-0000109 MI-0000110 MI-0000111 MI-0000112	+X	Half Sine Wave Shock: 10G , 6 ms 500 Shocks/Direction Total: 3000 Shocks		500	Operational test. Test completed to the specification requirements.			
		-X			500				
		+Y			500				
		-Y			500				
		+Z			500				
		-Z			500				
		DEFINITION OF AXES							
		See Photos Page							
TEST ENGINEER: LIAN SUN				<i>GS</i>	DATE: 11-05-2018				



X-Axis

Y-Axis

Z-Axis

JOB NO. : QL-18-1291

Model: MicroNIR OnSite-W (8 units)

11-06-2018

QUANTA LABORATORIES EQUIPMENT LIST



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 Phone: (408) 988-0770 FAX: (408) 988-0762
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Client:	Viavi Solutions Inc.			P.O. NO:	280040190	
				JOB NO.:	QL-18-1291	
DIGITAL SYSTEM LIST						
Device Type	Description	Make & Model	Range	Asset #	Serial #	Due Date
Shaker Control System	VC-23	Dactron LDS Laser USB	0.1Hz - 3 KHz RES. 0.1dB	QL-0330	10065179	04/02/2019
MECHANICAL SYSTEM LIST						
Device Type	Description	Make & Model	Range	Asset #	Serial #	Due Date
Shaker Amplifier	Purple/Blue 335	ETS MPA3324		QL-0920	1102043	Time of Test
Electrodynamic Shaker	Purple/Blue 335	Ling B-335 (Blue)	5Hz - 3 KHz	QL-0509	92	Time of Test
Electrodynamic Shaker	Purple/Blue 335	Ling B-335 (Purple)	5Hz - 3 KHz	QL-0918	122	Time of Test
SENSOR LIST						
Device Type	Description	Make & Model	Range	Asset #	Serial #	Due Date
Accelerometers	Single-Axial	DYTRAN 3030B4	20~3000 Hz 500 G	QL-1023	20087	01/10/2019

Notes:

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2. Measurement uncertainty are calculated using a confidence level of 95% with a coverage factor of 2 (k=2)



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Quanta Laboratories Test Report

Quanta Laboratories submits this report with our Certificate of Conformance to the requirements of the applicable specifications and with appropriate supporting data, but with no other expressed or implied warranty. Customer assumes full responsibility when using or interpreting the data herein for evaluation and/or reporting purposes.

End of Report
QL-18-1291
