CLASSIFICATION
Constructional Data Report (CDR)

1.0 Reference and Address			
Report Number	101992783LAX-001	Original Issued: 28-Apr-2015	Revised: 16-Jun-2016
Standard(s)	UL 2703 Issued: 2015/01/28 Ed: 1 Mounting Systems, Mounting Devices, Clamping/ Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels		

Applicant	Pegasus Solar Inc.	Manufacturer 1	[redacted]
Address	100 W Ohio Ave Richmond, CA 94804	Address	[redacted]
Country	USA	Country	[redacted]
Contact	E. Kai Stephan	Contact	[redacted]
Phone	(408) 638-9655	Phone	[redacted]
FAX	NA	FAX	[redacted]
Email	kai@pegasussolar.com	Email	[redacted]

Manufacturer 2	[redacted]
Address	[redacted]
Country	[redacted]
Contact	[redacted]
Phone	[redacted]
FAX	[redacted]
Email	[redacted]

2.0 Product Description		
Product	PV Racking System	
Brand name	Pegasus Solar Lightspeed Mounting Systems	
Description	The product covered by this report is a rail-less mounting system produced by Pegasus Solar for PV solar modules. The product line comes in black anodized parts made from stainless steel and aluminum. The PV racking system tested is a rail-less system that has a clamp assembly that bonds through the bottom of the module frames through stainless steel pins in the Bottom Clamp. The clamp assembly is bonded with an Arm and Base which attaches directly to roof. Corner hinges are bonded to the PV frame using four stainless steel screws and a backplate. Each Corner Hinge is bonded together with serrated bolts and threaded into tapped holes in hinges. An open corner hinge at the end of a string of PV modules will have a UL 467 listed grounding devices to ground system. Clamp assembly bonds with module frame that are bonded to ground through corner hinges to grounding device. The clamps are bonded to the stainless steel hardware and to the Arm with a bonding ring that pierces anodized coating. Base is bonded to the Arm through their respective threaded connection. The systems have only been tested for bonding, grounding, and electrical continuity, no mechanical load was performed and no load rating has been given. The Installer of the systems is responsible for following the installation manual for the installation of the grounding lug and shall provide an appropriate method of direct-to-earth grounding according to the latest edition of the National Electrical Code, including NEC 250: Grounding and Bonding, and NEC 690: Solar Photovoltaic Systems. Any local electrical codes must be adhered in addition to the national electrical codes.	
Models	Lightspeed Mount	
Model Similarity	NA	
Ratings	Fuse Rating: 20 A Grounding Conductor: 10 AWG Cu. Fire Class Resistance Rating: Class A for Steep Slope Applications when using Type 1 or 2, Listed Photovoltaic Modules. Class A for low slope application when using a wind deflector with a maximum of 2 1/8” air space between the wind deflector and roof and Type 1, Listed Photovoltaic Modules	
Other Ratings	**Modules added based on evaluation for bonding and grounding only with a maximum coating thickness of 26 microns**	
	Module manufacturer	**Model numbers**
	ReneSola	JC Series: Virtus II Module 255W, 260W, 265W, 305W, 310W, 315W
	Yingli Solar	YGE 60 YGEU 72
	Canadian Solar	CS6X-P CS6P-P CS6X-M CS6-M All Black
	SolarWorld	SunModule Plus SunModule Pro SunModule Protect

2.0 Product Description		
Other Ratings	AU Optronics (BenQ)	PM Series: AC-PM245PA2 AUO GT-PM060P00 GT-PM250MO1 PM060M01
	ET Solar	ET series: (Monocrystalline) ET BLACK MODULE: ET-M660XXXBB (XXX=250, 255, 260, or 265) ET MODULE: ET-M660XXXWW (XXX=255, 260, 265, or 270) ET MODULE: ET-M672XXXWW (XXX=305, 310, 315, or 320)
	Hyundai	MG series: Poly-crystalline Type HiS-M230MG (BK) HiS-M235MG (BK) HiS-M240MG (BK) Mono-crystalline Type HiS-S250MG (BK) HiS-S255MG (BK) HiS-S260MG (BK)
	Trina	PA05 PD05 PD14
	Hanwha Solar One	HSL 72 HSL 60
	Jinko	JKM series: JKM315P-72 JKM265P-60 JKM270PP-60
	Suniva	OPT 72 38 mm
	UpSolar	UP-M series
	LG	Mono X series Neon Series

8.0 Test Summary					
Evaluation Period	23-Feb-2015 to 20-Apr-2015			Project No.	G101992783
Sample Rec. Date	18-Feb-2015	Condition	Production	Sample ID.	LAN1502181021
Test Location	25791 Commercentre Drive, Lake Forest, CA 92630				
Test Procedure	Testing Lab				

Determination of the result includes consideration of measurement uncertainty from the test equipment and methods. The product was tested as indicated below with results in conformance to the relevant test criteria.

The following tests were performed at Lake Forest, CA

Test Description	UL SUBJECT 2703
Bonding Path Resistance Test	13
Temperature Cycling Test	17
Humidity Test	18
Bonding Conductor Test	22

The following tests were performed at Intertek Middleton, WI, Class 'A' fire rating with steep slope application to Type 1 photovoltaic panels and Class 'A' fire ratings with low slope application when using a wind deflector with a maximum of 2 1/8" air space between the wind deflector and roof and Type 1, Listed Photovoltaic Modules. Refer to report number: 1019788298MID-004

Test Description	UL SUBJECT 2703	UL 1703
Fire Test	15.2 and 15.3	31.2

Evaluation Period	26-Aug-2015 to 31-Aug-2015			Project No.	101992790MID-005
Sample Rec. Date	26-Aug-2015	Condition	Production	Sample ID.	1 through 6
Test Location	8431 Murphy Drive, Middleton, WI 53562				
Test Procedure	Testing Lab				

Determination of the result includes consideration of measurement uncertainty from the test equipment and methods. The product was tested as indicated below with results in conformance to the relevant test criteria.

The following tests were performed at Intertek Middleton, WI, Class 'A' fire rating with steep slope application to Type 2 photovoltaic panels, tested with 5" gap, per standard system can be installed at any gap allowed by manufactures installation instructions. Refer to report number: 101992790MID 005.

Test Description	UL SUBJECT 2703	UL 1703
Fire Test	15.2 and 15.3	31.2

Evaluation Period	April 25, 2016 through June 20, 2016			Project No.	G102536387
Sample Rec. Date	25-Apr-16	Condition	Production	Sample ID.	LAN1604251546
Test Location	Schneider Electric, 3700 6th street SW, Cedar Rapids, Iowa 52404				
Test Procedure	Testing at Manufacturers Premises (TMP) - Level 1				

Determination of the result includes consideration of measurement uncertainty from the test equipment and methods. The product was tested as indicated below with results in conformance to the relevant test criteria.

The following tests were performed at Satellite Level 1, Schneider Electric, Cedar Rapids, Iowa

Test Description	UL 2703
Bonding Conductor Test	22

8.1 Signatures

A representative sample of the product covered by this report has been evaluated and found to comply with the applicable requirements of the standards indicated in Section 1.0 with regard to the risks of bonding and grounding only. The risks associated with the other properties (mounting) of this product have not been investigated.

Completed by:	Michael Hoffnagle	Reviewed by:	Amar Kacel
Title:	PV Engineer	Title:	Reviewer
Signature:		Signature:	

9.0 Correlation Page For Multiple Listings	
The following products, which are identical to those identified in this report except for model number and Listee name, are authorized to bear the ETL label under provisions of the Intertek Multiple Listing Program.	
BASIC LISTEE	Pegasus Solar Inc.
Address	100 W Ohio Ave Richmond, CA 94804
Country	USA
Product	PV Racking System

MULTIPLE LISTEE 1	None
Address	
Country	
Brand Name	
ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 1 MODELS	BASIC LISTEE MODELS

MULTIPLE LISTEE 2	None
Address	
Country	
Brand Name	
ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 2 MODELS	BASIC LISTEE MODELS

MULTIPLE LISTEE 3	None
Address	
Country	
Brand Name	
ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 3 MODELS	BASIC LISTEE MODELS

10.0 General Information

The Applicant and Manufacturer have agreed to produce, test and label ETL Listed products in accordance with the requirements of this Report. The Manufacturer has also agreed to notify Intertek and to request authorization prior to using alternate parts, components or materials.

COMPONENTS

Components used shall be those itemized in this Intertek report covering the product, including any amendments and/or revisions.

LISTING MARK

The ETL Listing mark applied to the products shall either be separable in form, such as labels purchased from Intertek, or on a product nameplate or other media only as specifically authorized by Intertek. Use of the mark is subject to the control of Intertek.

The mark must include the following four items:

1) applicable country identifiers "US" and/or "C" or "US", "C" and "EU"
2) the word "Listed" or "Classified" or "Recognized Component" (whichever is appropriate)
3) a control number issue by Intertek
4) a product descriptor that identifies the standards used for certification. Example:

For US standards, the words, “Conforms to” shall appear with the standard number along with the word, “Standard” or “Std.” Example: “Conforms to ANSI/UL Std. XX.”

For Canadian standards, the words “Certified to CAN/CSA Standard CXX No. XX.” shall be used, or abbreviated, “Cert. to CAN/CSA Std. CXX No. XX.”

Can be used together when both standards are used.

Note: A facsimile must be submitted to Intertek, Attn: Follow-up Services for approval prior to use. The facsimile need not have a control number. A control number will be issued **after signed Certification Agreements** have been received by the Follow-up Services office, approval of the facsimile of your proposed Listing Mark, satisfactory completion of the Listing Report, and scheduling of a factory assessment in your facility.

MANUFACTURING AND PRODUCTION TESTS

Manufacturing and Production Tests shall be performed as required in this Report.

FOLLOW-UP SERVICE

Periodic unannounced audits of the manufacturing facility (and any locations authorized to apply the mark) shall be scheduled by Intertek. An audit report shall be issued after each visit. Special attention will be given to the following:

1. Conformance of the manufactured product to the descriptions in this Report.
2. Conformance of the use of the ETL mark with the requirements of this Report and the Certification Agreement.
3. Manufacturing changes.
4. Performance of specified Manufacturing and Production Tests.

In the event that the Intertek representative identifies non-conformance(s) to any provision of this Report, the Applicant shall take one or more of the following actions:

1. Correct the non-conformance.
2. Remove the ETL Mark from non-conforming product.
3. Contact the issuing product safety evaluation center for instructions.

10.1 Evaluation of Unlisted Components

Because Unlisted Components are uncontrolled, and they do not fall under a third party follow up program, Intertek may require these components to be tested and/or evaluated at least once annually, more often for certain components, as part of the independent certification process. The Unlisted Components in Section 5.0 require testing and/or evaluation as indicated.

Note to Intertek Follow Up Inspector: The Component Evaluation Center, CEC, will notify you in writing when these components must be selected and sent to the CEC for re-evaluation

Ship the samples to:
Intertek Testing Services NA Inc.
ETL Component Evaluation Center
45000 Helm Street, Suite 150
Plymouth Twp., MI 48170 USA
Attn: Component Evaluation Center
Sample Disposition: Due to the destructive nature of the testing, all samples will be discarded at the conclusion of testing unless, the manufacturer specifically requests the return of the samples. The request for return must accompany the initial component shipment.

11.0 Manufacturing and Production Tests
The manufacturer agrees to conduct the following Manufacturing and Production Tests as specified: none

12.0 Revision Summary				
The following changes are in compliance with the declaration of Section 8.1:				
Date/ Proj # Site ID	Project Handler/ Reviewer	Section	Item	Description of Change
28-Aug-2015 G102267511SVN	E. Rashidi D. Tesfaye	1	--	Added Manufacturer [redacted]

12.0 Revision Summary				
The following changes are in compliance with the declaration of Section 8.1:				
Date/ Proj # Site ID	Project Handler/ Reviewer	Section	Item	Description of Change
22-Sep-2015		1	--	Address change for Applicant to: "100 W Ohio Ave, Richmond, CA 94804"
G102296562LAX	M. Hoffnagle A. Koretoff	2	Rat	Added "or 2" for the addition of Type 2 module fire rating for steep only
		4	4a	Added component "Base, Die cast" part number "RP-CBS4E-MST" and added to information to technical data
			5a	Added component "Arm, Die Cast" part number "RP-CSA4B-MST" and added to information to technical data
			5b	Added component "Arm, Die Cast" part number "RP-EAR3B-BST, RP-EAR3B-B375, RP-EAR3B-B400" and added to information to technical data
			6	Added name "Double Mounting System" and "Main component in system is called Spanner Bar" in Technical Data section
				Added part numbers "RP-ESB1D-BST" and "RP-ESB1E-BST"
				Added to technical data: "Length of bar can be 14" or 16"."and illustration references
			15	Updated installation manual version "A" to "S" and added "As of 9/14/15"
		7	1-15	Updated installation manual illustrations 2-15
			28	Updated "Illustration 28 - Spanner Bar Mounting Assembly" with "Illustration 28 - "Double Mounting Assembly- 40mm"
			28a	Added "Illustration 28a - Double Mounting Assembly- 35mm"
			32	updated illustration 32
			32a	Added "Illustration 32a -Corner Hinge Schematic, 32 mm" and illustration
			32b	Added "Illustration 32b -Corner Hinge Schematic, 32 mm" and illustration
			33	updated illustration 33
			36	updated illustration 36
			36a	Added "Illustration 36a - Die Cast Base" and illustration
			41	updated illustration 41
			42	updated illustration 42
			43a	Added "Illustration 43a - Die Cast Arm" and illustration
			43b	Added "Illustration 43b - Extruded Arm, RP-EAR3B-BST" and illustration
			43c	Added "Illustration 43c - Extruded Arm, RP-EAR3B-B375" and illustration
			43d	Added "Illustration 43d - Extruded Arm, RP-EAR3B-B400" and illustration
			46a	Added "Illustration 46a - Alternate 16" Spanner Bar with tapped hole" and illustration
			50a	Added "Illustration 50a - Stamped Skirt"
			46b	Added "Illustration 46b - Alternate 16" Spanner Bar with slotted hole" and illustration
		8	--	Added Test Summary Block Dated 08/26/2015 through 08/31/2015
		8.1	--	Revised Signatures for Test Summary Block Dated 08/26/2015 through 08/31/2015

12.0 Revision Summary				
The following changes are in compliance with the declaration of Section 8.1:				
Date/ Proj # Site ID	Project Handler/ Reviewer	Section	Item	Description of Change
16-Jun-2016		1	--	Updated standard to Edition 1 [redacted]
G102536387LAX		2	--	Deleted table “Module frames tested for bonding and grounding only” Added “with a maximum coating thickness of 26 microns” Added module manufacturer “LG”
		4	1	Changed Type / model from “RP-ECH4E-BST, RP-ECH4E-B32, RP-ECH4E-B35, RP-DCHC-B35” to “116-1002-0XX (XX = 001,002,003,004), 116-1004-0XX (XX = 001,002,003,004)”
			2	Changed Type / model from “RP-EBP3E-MST RP-EBP3E-M33 RP-EBP3E-MSW” to “116-1006-001 116-1031-001”
			3	Moved reference to file number to manufacturer column
			4	Changed Type / model from “RA-EBS4C-MST” to “116-1016-001” Changed Type / model from “RP-CBS4E-MST” to “116-1029-001”
			5	Changed Type / model from “RA-ESA4A-MST” to “316-1001-0XX (XX=001, 002, 003), 316-1003-0XX (XX=001, 002, 003)” Changed Type / model from “RP-CSA4B-MST” to “116-1008-001, 116-1030-001” Added “control # 4004188” Combined all names to "Single Mounting Assembly, Arm, Die Cast, Arm Extruded"
			6	Changed Type / model from “RP-ESB1C-MST, RP-ESB1D-BST, RP-ESB1E-BST” to “116-1015-001”
			7	Changed Type / model from “RP-ETC3G-BST” to “116-1012-0XX (0XX=001,002,003,004)”
			8	“RP-EBC3K-BST RP-EBC3K-B32, RP-EBC3K-B33, RP-EBC3K-B35” to “116-1013-001, 116-1014-001”
			9	Changed Type / model from “RP-MBP3B-MST” to “116-1020-001”
			10	Changed Type / model from “RP-SCR4E-MST” to “116-1036-001”
			14	“RP-EBS4D-MST, RP-ETBS4A-MXX, RP-EBS4D-MCM” to “116-1042-001, 116-1043-001”
			15	Updated revision and dates

12.0 Revision Summary				
The following changes are in compliance with the declaration of Section 8.1:				
Date/ Proj # Site ID	Project Handler/ Reviewer	Section	Item	Description of Change
			1, 2, 4, 5, 7, 8	Updated references to Illustrations
	 M. Hoffnagle  A. Kacel	7	1-15, 28a, 29,30, 31,32, 32a, 32b, 33,36, 36a, 37, 43a, 44,45, 46b, 47,48, 51,52	Updated Illustrations
			15a-15d, 28b, 29a, 31a, 32c-32s, 33a, 33b, 37a, 43aa, 44a, 45a, 45b, 46c	Added Illustrations
			35	Deleted Illustration
		8	--	Added Test Summary Block Dated April 25, 2016 through June 20, 2016