NOTICE OF COMPLETION
AND
AUTHORIZATION TO APPLY THE UL MARK

2019-07-11

MR. BIJAY SHRESTHA
TIGO ENERGY, INC.
420 BLOSSOM HILL RD # 100
LOS GATOS, CA, 95032-4511

Our Reference:	File E469960, Vol 3	Order:	12786169
		Project:	4788939506
Your Reference:	Bijay Shrestha 3/22/2019		
Project Scope:	PVRSS system Phase 1 and 2 - Revisions to Delta's Inverter QIJS		

Dear Mr. Shrestha:

Congratulations! UL's investigation of your product(s) has been completed under the above Reference Number and the product was determined to comply with the applicable requirements. This letter temporarily supplements the UL Follow-Up Services Procedure and serves as authorization to apply the UL Mark at authorized factories under UL's Follow-Up Service Program. To provide your manufacturer(s) with the intended authorization to use the UL Mark, you must send a copy of this notice to each manufacturing location currently authorized under File , Vol 3.

Records in the Follow-Up Services Procedure covering the product are now being prepared and will be sent in the near future. Until then, this letter authorizes application of the UL Mark for 90 days from the date indicated above.

Additional requirements related to your responsibilities as the Applicant can be found in the document “Applicant responsibilities related to Early Authorizations” that can be found at the following web-site: http://www.ul.com/EAResponsibilities

Any information and documentation provided to you involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

We are excited you are now able to apply the UL Mark to your products and appreciate your business. Feel free to contact me or any of our Customer Service representatives if you have any questions.

Very truly yours,

Ian McDonald
Senior Staff Engineer
Ian.McDonald@ul.com

Reviewed by:

Bruce A. Mahrenholz
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TIGO ENERGY, INC. June 12, 2019 E469960

420 BLOSSOM HILL RD # 100

LOS GATOS, CA 95032-4511 USA

System Cat. No.	Subassembly Equipment	System Ratings
Photovoltaic rapid shutdown system		
Tigo Rapid shutdown system, PVRSS: TS4 Optimizer (*Report Date: 2017-02-24*)	DC Attenuators: Models TS4-O, TS4-L (*Report Date: 2014-09-23*), TS4-R-O, TS4-R-O-DUO, TS4-A-O, TS4-A-O-DUO (*Report Date: 2017-12-18*) Wireless Controllers: Model 150-00000-50 (*Report Date: 2017-01-06*), 158-20000-00 (*Report Date: 2018-03-21*) Inverters: SMA SB6.0-1SP-US-40 Rated 600Vdc input, 10Adc input per string (3 inputs provided) SMA SB5.0-1SP-US-40 Rated 600Vdc input, 10Adc input per string (3 inputs provided) Huawei Technologies Co., LTD. SUN2000-30KTL-US Rated 1000Vdc input, 25A input per string (3 inputs provided) Evaluated with firmware SUN2000V200R002C20SPC104 SUN2000-40KTL-US, rated 1000 Vdc SUN2000-36KTL-US, rated 1000 Vdc SUN2000-33KTL-US, rated 1000 Vdc KACO blueplanet 3.0TL1 M2 WMODUS39 Rated 600Vdc input, 13.2A input per string (2 inputs provided) Power-One PVI-4.2-OUTD-S-US-A Rated 600Vdc input, 16Adc input per string (2 inputs provided) Fronius Galvo 2.5-1 208-240 Rated 550Vdc input, 16.1Adc input Primo 15.0-1 (15kW), rated 1000Vdc Primo 12.5-1 (12.5kW), rated 1000Vdc , Primo 11.4-1 (11.4kW), rated 1000Vdc , Primo 10.0-1 (10kW), rated 1000Vdc	Input: 8-90VDC, 15Amax per module, 15A max input short circuit current Output: 8-90VDC, 15A max cont. output current, 500W max per module (700W when used with -DUO optimizer), 1500VDC maximum system voltage, however limited by inverter DC system voltage.

	Primo 8.2-1, Rated 1000Vdc Primo 7.6-1, Rated 1000Vdc Primo 6.0-1, Rated 1000Vdc Primo 5.0-1, Rated 1000Vdc Primo 3.8-1, Rated 1000Vdc Symo Advanced 24.0-3 (24kW), rated 1000Vdc , Symo Advanced 20.0-3 (20kW), rated 1000Vdc , Symo Advanced 15.0-3 (15kW), rated 1000Vdc , Symo Advanced 12.0-3 (12kW), rated 1000Vdc , Symo Advanced 10.0-3 (10kW), rated 1000Vdc Ingeteam INGECON SUN 40TL U M480 Rated 1000Vdc input, 40Adc Solectria Renewables PVI-23TL-480 Rated 1000Vdc input, 27A input per string (2 inputs provided) Solis Inverters Solis-5K-2G-US Rated 600Vdc input, 15Adc input per string (2 inputs provided) Solectria Renewables PVI-5200TL Rated 600Vdc input, 15A input per string (2 inputs provided) Sungrow SG60KU-M Rated 1000Vdc input, 112A input SMA STP 12000TL-US-10 Rated 1000Vdc input, 14.5Adc input per string SMA STP 15000TL-US-10 Rated 1000Vdc input, 18.1Adc input per string SMA STP 20000TL-US-10 Rated 1000Vdc input, 24.1Adc input per string SMA STP 24000TL-US-10 Rated 1000Vdc input, 29.0Adc input per string SMA STP 30000TL-US-10 Rated 1000Vdc input, 36.1Adc input per string SMA STP 50-US-40 Rated 1000 Vdc input, 20.0Adc input per string SMA SB3.0-1SP-US-40 Rated 600Vdc input, 16Adc input per string (3 inputs provided) SMA SB3.8-1SP-US-40 Rated 600Vdc input, 16Adc input per string (3 inputs provided) SMA SB7.0-1SP-US-40 Rated 600Vdc input, 32Adc input per string (3 inputs provided) SMA SB7.7-1SP-US-40 Rated 600Vdc input, 32Adc input per string (3 inputs provided) ABB UNO-8.6-TL-OUTD-S-US Rated 600Vdc input, 24Adc input per string (2 inputs provided) ABB UNO-7.6-TL-OUTD-S-US Rated 600Vdc input, 24Adc input per string (2 inputs provided)	

	ABB UNO-DM-6.0-TL-PLUS-US Rated 600Vdc input, 20Adc input per string (2 inputs provided) ABB UNO-DM-5.0-TL-PLUS-US Rated 600Vdc input, 19Adc input per string (2 inputs provided) ABB UNO-DM-4.6-TL-PLUS-US Rated 600Vdc input, 16Adc input per string (2 inputs provided) ABB UNO-DM-3.8-TL-PLUS-US Rated 600Vdc input, 10Adc input per string (2 inputs provided) ABB UNO-DM-3.3-TL-PLUS-US Rated 600Vdc input, 10Adc input per string (2 inputs provided) ABB Trio-TM-60.0-US-480, rated 1000Vdc ABB PVS-60-TL-CN, rated 1000Vdc Ginglong Solis, Solis-66K-US-F-SW(66kW), Rated 1000Vdc. Ginglong Solis, Solis-60K-US-F-SW(60kW), Rated 1000Vdc Ginglong Solis, Solis-50K-US-F-SW(50kW), Rated 1000Vdc. Ginglong Solis, Solis-50K-US-SW(50kW), Rated 1000Vdc. Ginglong Solis, Solis-40K-US-SW (40kW), Rated 1000Vdc. Ginglong Solis, Solis-40K-US-F-SW (40kW), Rated 1000Vdc. Canadian solar (CSI), CSI-66KTL-GS (66kW), Rated 1000Vdc Canadian solar (CSI), CSI-60KTL-GS (60kW), Rated 1000Vdc Canadian solar (CSI), CSI-50KTL-GS (50Kw), Rated 1000Vdc Canadian solar (CSI), CSI-50KTL-GS-FL (50Kw), Rated 1000Vdc Canadian solar (CSI), CSI-40KTL-GS (40Kw), Rated 1000Vdc Canadian solar (CSI), CSI-40KTL-GS-FL (40Kw), Rated 1000Vdc Delta(Residential), M10-TL-US (10kW), Rated 600Vdc M8-TL-US (8kW), Rated 600Vdc M6-TL-US (6kW), Rated 600Vdc M5-TL-US (5kW), Rated 600Vdc M4-TL-US (4kW), Rated 600Vdc E8-TL-US (8kW), Rated 600Vdc E6-TL-US (6kW), Rated 600Vdc	

	Chint, CPS SCA60KTL-DO/US-480, Rated 1000Vdc Chint, CPS SCA50KTL-DO/US-480, Rated 1000Vdc Chint, CPS SCA36KTL-DO/US-480, Rated 1000Vdc Solectria, PVI 60TL (60kW), Rated 1000Vdc Solectria, PVI 50TL (50kW), Rated 1000Vdc Solectria, PVI 36TL (36kW), Rated 1000Vdc Growatt New Energy Technology Co., Ltd., 4000MTLP-US (4kW), Rated 600Vdc 6000MTLP-US (5kW), Rated 600Vdc 5000MTLP-US (6kW), Rated 600Vdc 7000MTLP-US (7kW), Rated 600Vdc 7600MTLP-US (7.6kW), Rated 600Vdc 9000MTLP-US (8kW), Rated 600Vdc 8000MTLP-US (9kW), Rated 600Vdc 10000MTLP-US (10kW), Rated 600Vdc 33000TL3-US (36kW), Rated 1000Vdc 36000TL3-US (33kW), Rated 1000Vdc 40000TL3-US (40kW), Rated 1000Vdc SMA Solar Technology, STP62 US-41, Rated 1000Vdc SMA Solar Technology, STP50 US-41, Rated 1000Vdc SMA Solar Technology, STP33 US-41, Rated 1000Vdc SMA, SB 7.7 SP-US-41, rated 600Vdc SMA, SB 7.7 TP-US-41, rated 600Vdc SMA, SB 7.0 SP-US-41, rated 600Vdc SMA, SB 7.0 TP-US-41, rated 600Vdc SMA, SB 6.0 SP-US-41, rated 600Vdc SMA, SB 6.0 TP-US-41, rated 600Vdc SMA, SB 5.0 SP-US-41, rated 600Vdc SMA, SB 5.0 TP-US-41, rated 600Vdc SMA, SB 3.8 SP-US-41, rated 600Vdc SMA, SB 3.8 TP-US-41, rated 600Vdc SMA, SB 3.0 SP-US-41, rated 600Vdc SMA, SB 3.0 TP-US-41, rated 600Vdc SolaX Power Co. Ltd., A1-Hybrid-8.6-US, 500Vdc SolaX Power Co. Ltd., A1-Hybrid-7.6-US, 500Vdc SolaX Power Co. Ltd., A1-Hybrid-7.0-US, 500Vdc SolaX Power Co. Ltd., A1-Hybrid-6.0-US, 500Vdc SolaX Power Co. Ltd., A1-Fit-8.6-US, 500Vdc SolaX Power Co. Ltd., A1-Fit-7.6-US, 500Vdc SolaX Power Co. Ltd., A1-Fit-7.0-US, 500Vdc SolaX Power Co. Ltd., A1-Fit-6.0-US, 500Vdc Pika Energy X11400(11.4 kW) + PV-Link, rated 1000 Vdc X7600(8 kW) + PV-Link, rated 1000 Vdc	
Tigo Rapid Shutdown_TS4-	DC Interrupters: Models TS4-S (*Report Date: 2014-09-23*)	Input: 8-90VDC, 15Amax per module, 15A max

S (*Report Date: 2017-05-20*)	TS4-R-S, or TS4-R-S-DUO (*Report Date: 2017-12-18*) Wireless Controllers: Model 150-00000-50 (*Report Date: 2017-01-06*), 158-20000-00 (*Report Date: 2018-03-21*) Inverters: SMA SB6.0-1SP-US-40 Rated 600Vdc input, 10Adc input per string (3 inputs provided) SMA SB5.0-1SP-US-40 Rated 600Vdc input, 10Adc input per string (3 inputs provided) SMA, SB 7.7 SP-US-41, rated 600Vdc SMA, SB 7.7 TP-US-41, rated 600Vdc SMA, SB 7.0 SP-US-41, rated 600Vdc SMA, SB 7.0 TP-US-41, rated 600Vdc SMA, SB 6.0 SP-US-41, rated 600Vdc SMA, SB 6.0 TP-US-41, rated 600Vdc SMA, SB 5.0 SP-US-41, rated 600Vdc SMA, SB 5.0 TP-US-41, rated 600Vdc. SMA, SB 3.8 SP-US-41, rated 600Vdc SMA, SB 3.8 TP-US-41, rated 600Vdc SMA, SB 3.0 SP-US-41, rated 600Vdc SMA, SB 3.0 TP-US-41, rated 600Vdc. Fronius Fronius, Symo Advanced 24.0-3 (24kW), rated 1000Vdc , Fronius, Symo Advanced 20.0-3 (20kW), rated 1000Vdc , Fronius, Symo Advanced 15.0-3 (15kW), rated 1000Vdc , Fronius, Symo Advanced 12.0-3 (12kW), rated 1000Vdc , Fronius, Symo Advanced 10.0-3 (10kW), rated 1000Vdc Primo 8.2-1, Rated 1000Vdc Primo 7.6-1, Rated 1000Vdc Primo 6.0-1, Rated 1000Vdc Primo 5.0-1, Rated 1000Vdc Primo 3.8-1, Rated 1000Vdc Ingeteam Solis Inverters Solis-5K-2G-US Rated 600Vdc input, 15Adc input per string (2 inputs provided) SMA STP 12000TL-US-10 Rated 1000Vdc input, 14.5Adc input per string SMA STP 15000TL-US-10 Rated 1000Vdc input, 18.1Adc input per string	input short circuit current Output: 8-90VDC, 15A max cont. output current, 500W max per module (700W when used with -DUO optimizer), 1500VDC maximum system voltage, however limited by inverter DC system

	SMA STP 20000TL-US-10 Rated 1000Vdc input, 24.1Adc input per string SMA STP 24000TL-US-10 Rated 1000Vdc input, 29.0Adc input per string SMA STP 30000TL-US-10 Rated 1000Vdc input, 36.1Adc input per string SMA STP 50-US-40 Rated 1000 Vdc input, 20.0Adc input per string SMA SB3.0-1SP-US-40 Rated 600Vdc input, 16Adc input per string (3 inputs provided) SMA SB3.8-1SP-US-40 Rated 600Vdc input, 16Adc input per string (3 inputs provided) SMA SB7.0-1SP-US-40 Rated 600Vdc input, 32Adc input per string (3 inputs provided) SMA SB7.7-1SP-US-40 Rated 600Vdc input, 32Adc input per string (3 inputs provided) Pika Energy X11400(11.4 kW) + PV-Link, rated 1000 Vdc X7600(8 kW) + PV-Link, rated 1000 Vdc Huawei Evaluated with firmware SUN2000V200R002C20SPC104 SUN2000-40KTL-US SUN2000-36KTL-US SUN2000-33KTL-US	
Tigo Rapid Shutdown_TS4-S-LV (*Report Date: 2017-05-20*)	DC Interrupters: Models TS4-S (*Report Date: 2014-09-23*) TS4-R-S, or TS4-R-S-DUO (*Report Date: 2017-12-18*) Wireless Controllers: Model 150-00000-50 (*Report Date: 2017-01-06*) 158-20000-00 (*Report Date: 2018-03-21*) Inverters: ABB UNO-8.6-TL-OUTD-S-US Rated 600Vdc input, 24Adc input per string (2 inputs provided) ABB UNO-7.6-TL-OUTD-S-US Rated 600Vdc input, 24Adc input per string (2 inputs provided) ABB UNO-DM-6.0-TL-PLUS-US Rated 600Vdc input, 20Adc input per string (2 inputs provided) ABB UNO-DM-5.0-TL-PLUS-US Rated 600Vdc input, 19Adc input per string (2 inputs provided) ABB UNO-DM-4.6-TL-PLUS-US Rated 600Vdc input, 16Adc input per string (2 inputs provided) ABB UNO-DM-3.8-TL-PLUS-US Rated 600Vdc input, 10Adc input per string (2 inputs provided) ABB UNO-DM-3.3-TL-PLUS-US Rated 600Vdc input, 10Adc input per string (2 inputs provided)	Input: 8-90VDC, 15Amax per module, 15A max input short circuit current Output: 8-90VDC, 15A max cont. output current, 500W max per module (700W when used with -DUO optimizer), 364.6VDC maximum system voltage.

Tigo Rapid shutdown system, PVRSS: Tigo Rapid Shutdown _TS4-F (*Report Date: 2019-01-24*)	DC Shutdown model (Tigo): TS4-F, TS4-R-F, TS4-R-F-DUO, TS4-A-F, TS4-A-F-DUO Tigo Transmitter (PLC) : 490-00100-10, (RSS Transmitter PCBA, Single RSS Core), 490-00100-20 (RSS Transmitter PCBA, Dual RSS Core), 490-00000-10 RSS (Transmitter Din Rail, Single RSS Core), 490-00000-20 (RSS Transmitter Din Rail, Dual RSS Core) 492-00000-10 RSS (Transmitter Din Rail, Single RSS Core, Outdoor), 492-00000-20 (RSS Transmitter Din Rail, Dual RSS Core, Outdoor) Inverter: Ginglong Solis, Solis-66K-US-F-SW(66kW), Rated 1000Vdc. Ginglong Solis, Solis-60K-US-F-SW(60kW), Rated 1000Vdc Ginglong Solis, Solis-50K-US-F-SW(50kW), Rated 1000Vdc. Ginglong Solis, Solis-50K-US-SW(50kW), Rated 1000Vdc. Ginglong Solis, Solis-40K-US-SW (40kW), Rated 1000Vdc. Ginglong Solis, Solis-40K-US-F-SW (40kW), Rated 1000Vdc. Canadian solar (CSI), CSI-66KTL-GS (66kW), Rated 1000Vdc Canadian solar (CSI), CSI-60KTL-GS (60kW), Rated 1000Vdc Canadian solar (CSI), CSI-50KTL-GS (50Kw), Rated 1000Vdc Canadian solar (CSI), CSI-50KTL-GS-FL (50Kw), Rated 1000Vdc Canadian solar (CSI), CSI-40KTL-GS (40Kw), Rated 1000Vdc Canadian solar (CSI), CSI-40KTL-GS-FL (40Kw), Rated 1000Vdc Delta -Commercial, M80U (80kW), Rated 1000Vdc Delta -Commercial, M60U (60kW), Rated 1000Vdc Delta -Commercial, M42U (42kW), Rated 1000Vdc Delta -Commercial, M36U (36kW), Rated 1000Vdc Note: Delta-Commercial inverters, with or without the use of the inverter internal 12Vdc power supply as a source for the Tigo Transmitter. Delta (Residential), M10-TL-US (10kW), Rated 600Vdc M8-TL-US (8kW), Rated 600Vdc M6-TL-US (6kW), Rated 600Vdc	Input: 8-90VDC, 15Amax per module, 15A max input short circuit current Output: 8-90VDC, 15A max cont. output current, 500W max per module (700W when used with -DUO optimizer), 364.6VDC maximum system voltage.

	M5-TL-US (5kW), Rated 600Vdc M4-TL-US (4kW), Rated 600Vdc E8-TL-US (8kW), Rated 600Vdc E6-TL-US (6kW), Rated 600Vdc YASKAWA / SOLECTRIA XGI1000-60/60-UL 60KW, Rated 1000Vdc XGI1000-60/65-UL 60KW, Rated 1000Vdc Growatt New Energy Co., Ltd., 4000MTLP-US (4kW), Rated 600Vdc 6000MTLP-US (5kW), Rated 600Vdc 5000MTLP-US (6kW), Rated 600Vdc 7000MTLP-US (7kW), Rated 600Vdc 7600MTLP-US (7.6kW), Rated 600Vdc 9000MTLP-US (8kW), Rated 600Vdc 8000MTLP-US (9kW), Rated 600Vdc 10000MTLP-US (10kW), Rated 600Vdc 33000TL3-US (36kW), Rated 1000Vdc 36000TL3-US (33kW), Rated 1000Vdc 40000TL3-US (40kW), Rated 1000Vdc SMA Solar Technology, STP62 US-41, Rated 1000Vdc STP50 US-41, Rated 1000Vdc , STP33 US-41, Rated 1000Vdc Note: with or without Tigo Transmitter. The SMA inverter may be provided with an internal Sunspec transmitter evaluated with the Tigo device for compatibility. SolaX Power Co. Ltd., A1-Hybrid-8.6-US, Rated 500Vdc SolaX Power Co. Ltd., A1-Hybrid-7.6-US, Rated 500Vdc SolaX Power Co. Ltd., A1-Hybrid-7.0-US, Rated 500Vdc SolaX Power Co. Ltd., A1-Hybrid-6.0-US, Rated 500Vdc SolaX Power Co. Ltd., A1-Fit-8.6-US, Rated 500Vdc SolaX Power Co. Ltd., A1-Fit-7.6-US, Rated 500Vdc SolaX Power Co. Ltd., A1-Fit-7.0-US, Rated 500Vdc SolaX Power Co. Ltd., A1-Fit-6.0-US, Rated 500Vdc Fronius, Symo Advanced 24.0-3 (24kW), rated 1000Vdc ,# Fronius, Symo Advanced 20.0-3 (20kW), rated 1000Vdc ,# Fronius, Symo Advanced 15.0-3 (15kW), rated 1000Vdc ,# Fronius, Symo Advanced 12.0-3 (12kW), rated 1000Vdc ,#	

	Fronius, Symo Advanced 10.0-3 (10kW), rated 1000Vdc # # w/o Tigo RSS Transmitter, inverter may use internal inverter PLC transmitter. Huawei Evaluated with firmware SUN2000V200R002C20SPC104 SUN2000-40KTL-US, rated 1000 Vdc SUN2000-36KTL-US, rated 1000 Vdc SUN2000-33KTL-US, rated 1000 Vdc ABB UNO-DM-6.0-TL-PLUS-US, rated 600 Vdc Trio-TM-60.0-US-480, rated 1000Vdc PVS-60-TL-CN, rated 1000Vdc Chint Power Limited to firmware "version 9.0" final release "9.0". CPS SCA60KTL-DO/US-480 rated 1000 Vdc, # CPS SCA50KTL-DO/US-480 rated 1000 Vdc, # # w/o Tigo RSS Transmitter, inverter may use internal inverter PLC transmitter. Chint Power CPS SCA36KTL-DO/US-480, rated 1000 Vdc SOLECTRIA, Limited to firmware "version 9.0". PVI 60TL (60kW) rated 1000 Vdc, # PVI 50TL (50kW) rated 1000 Vdc, # # w/o Tigo RSS Transmitter, inverter may use internal inverter PLC transmitter. SOLECTRIA PVI 36TL (36kW) SMA SMA, SB 7.7 SP-US-41, rated 600Vdc #, SMA, SB 7.7 TP-US-41, rated 600Vdc #, SMA, SB 7.0 SP-US-41, rated 600Vdc #, SMA, SB 7.0 TP-US-41, rated 600Vdc #, SMA, SB 6.0 SP-US-41, rated 600Vdc #, SMA, SB 6.0 TP-US-41, rated 600Vdc #, SMA, SB 5.0 SP-US-41, rated 600Vdc #, SMA, SB 5.0 TP-US-41, rated 600Vdc #. SMA, SB 3.8 SP-US-41, rated 600Vdc #, SMA, SB 3.8 TP-US-41, rated 600Vdc #, SMA, SB 3.0 SP-US-41, rated 600Vdc #, SMA, SB 3.0 TP-US-41, rated 600Vdc #.	

	# w/o Tigo RSS Transmitter, inverter may use internal inverter PLC transmitter.	