

VARIANT FCC TEST REPORT (PART 24)

Applicant:	Particle Industries, Inc
Address:	325 9th Street, San Francisco, CA 94103, United States Of America

Manufacturer or Supplier:	Particle Industries, Inc
Address:	325 9th Street, San Francisco, CA 94103, United States Of America
Product:	E Series Module
Brand Name:	Particle
Model Name:	E404X
FCC ID:	2AEMI-E404X
Date of tests:	Mar. 10, 2023 ~ Mar. 24, 2023

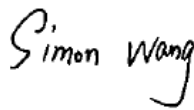
The tests have been carried out according to the requirements of the following standard:

- FCC PART 24, Subpart E**
 FCC PART 2
 ANSI/TIA/EIA-603-D
 ANSI/TIA/EIA-603-E
 ANSI C63.26-2015

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang
Engineer / Mobile Department

Approved by Luke Lu
Manager / Mobile Department



Date: Mar. 24, 2023



Date: Mar. 24, 2023

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P22110028RF02	Original release	Dec. 08, 2022
W7L-P23030011RF02	Based on the original product change components and hardware version, it doesn't affect RF Function, The new sample no change data.	Mar. 24, 2023



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 24 & Part 2		
STANDARD SECTION	TEST TYPE	RESULT
§2.1046	Coducted Output Power	See Note
§24.232(c)	Equivalent Isotropic Radiated Power	See Note
§2.1055 §24.235	Frequency Stability	See Note
§2.1049	Occupied Bandwidth	See Note
§24.232(d)	Peak to average ratio	See Note
§24.238(a)(b)	Band Edge Measurements	See Note
§2.1051 §24.238(a)(b)	Conducted Spurious Emissions	See Note
§2.1053 §24.238(a)(b)	Radiated Spurious Emissions	See Note

NOTE: Please refer to original report W7L-P22110028RF02, FCC ID: 2AEMI-E404X.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	E Series Module	
BRAND NAME	Particle	
MODEL NAME	E404X	
NOMINAL VOLTAGE	5.0Vdc(adapter or host equipment) 3.8Vdc (Li-ion, battery)	
MODULATION TYPE	LTE Band 2: QPSK, 16QAM	
FREQUENCY RANGE	LTE Band 2 Channel Bandwidth: 1.4MHz	1850.7MHz ~ 1909.3MHz
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5MHz ~ 1908.5MHz
	LTE Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~ 1907.5MHz
	LTE Band 2 Channel Bandwidth: 10MHz	1855.0MHz ~ 1905.0MHz
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5MHz ~ 1902.5MHz
	LTE Band 2 Channel Bandwidth: 20MHz	1860.0MHz ~ 1900.0MHz
MAX. EIRP POWER	LTE Band 2 Channel Bandwidth: 1.4MHz	445.66mW
	LTE Band 2 Channel Bandwidth: 3MHz	444.63mW
	LTE Band 2 Channel Bandwidth: 5MHz	443.61mW
	LTE Band 2 Channel Bandwidth: 10MHz	445.66mW
	LTE Band 2 Channel Bandwidth: 15MHz	444.63mW
	LTE Band 2 Channel Bandwidth: 20MHz	448.75mW
EMISSION DESIGNATOR	LTE Band 2 Channel Bandwidth: 1.4MHz	QPSK: 1M12G7D
		16QAM: 974KW7D
	LTE Band 2 Channel Bandwidth: 3MHz	QPSK: 1M12G7D
		16QAM: 974KW7D
	LTE Band 2 Channel Bandwidth: 5MHz	QPSK: 1M12G7D
		16QAM: 974KW7D
	LTE Band 2 Channel Bandwidth: 10MHz	QPSK: 1M12G7D
		16QAM: 974KW7D



	LTE Band 2 Channel Bandwidth: 15MHz	QPSK: 1M12G7D
		16QAM: 974KW7D
	LTE Band 2 Channel Bandwidth: 20MHz	QPSK: 1M12G7D
		16QAM: 974KW7D
ANTENNA TYPE	External Antenna(KIT) with 3.86dBi gain for LTE B2 External Antenna(Taoglas) with 3.5dBi gain for LTE B2	
HW VERSION	v1.0.0	
SW VERSION	V4.0.0	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	N/A	
EXTREME TEMPERATURE	-40-75 °C	
EXTREME VOLTAGE	3.3V – 4.3V	

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
LTE	1TX/1RX

- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- Sample Information:

Sample Number	Description
Sample 1	Main test Sample(U11:TI - bq24195, U12:Richtek -RT5760CHGH6F)
Sample 2	Based on Sample 1 changed U11 to TI - bq24190
Sample 3	Based on Sample 1 changed U12 to TI - TLV62568
Sample 4	Based on Sample 1 changed U12 to MPS - MP1601GTF-Z

Note: Full testing was performed by sample 1, other samples verified the worst case of RSE, Only the worst case data(Sample 1) was reported.



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2.2 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.



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3 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.



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4 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

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