TEST REPORT

Applicant:	Particle Industries, Inc.
EUT Description:	Tachyon
Model:	TACH4ROW, TACH8ROW
Brand:	Particle
Standards:	ETSI EN 301 908-2 V13.1.1 ETSI TS 134 121-1 V12.1.0
Date of Receipt:	2025/06/25
Date of Test:	2025/06/25 to 2025/08/27
Date of Issue:	2025/08/28

TOWE. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

the results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. without written approval of TOWE, the test report shall not be reproduced except in full.

Jim Huang
Approved By:

Carey Chen
Reviewed By:

Revision History

Rev.	Issue Date	Description	Revised by
01	2025/08/28	Original	Carey Chen

Summary of Test Results

Test Item	Test Requirement	Test Method	Result
	ETSI EN 301 908-2	ETSI TS 134 121-1	
Transmitter maximum output power	Clause 4.2.2.1	Clause 5.2	Pass
Transmitter spectrum emission mask	Clause 4.2.3.1	Clause 5.9	Reference report 2406RSU046-E4 & 2406RSU046-E5
Transmitter spurious emissions	Clause 4.2.4	Clause 5.11	
Transmitter minimum output power	Clause 4.2.5	Clause 5.4.3	
Transmitter Adjacent Channel Leakage Power Ratio (ACLR)	Clause 4.2.12	Clause 5.10	
Out-of-synchronization handling of output power	Clause 4.2.11	Clause 5.4.4	
Receiver adjacent channel selectivity (ACS)	Clause 4.2.6	Clause 6.4	
Receiver blocking characteristics	Clause 4.2.7	Clause 6.5	
Receiver spurious response	Clause 4.2.8	Clause 6.6	
Receiver intermodulation characteristics	Clause 4.2.9	Clause 6.7	
Receiver spurious emissions	Clause 4.2.10	Clause 6.8	
Receiver Reference Sensitivity level	Clause 4.2.13	Clause 6.2	

Remark:

1. Pass: Meet the requirement.
2. The EUT and test equipment were configured for testing according to ETSI EN 301 908-2 and ETSI TS 134 121-1.

Remark: In this report the Transmitter Output Power was tested, and the other data please refer to the previous report with report number 2406RSU046-E4 & 2406RSU046-E5 issued by MRT Technology (Suzhou) Co., Ltd.

Table of Contents

1 General Description

1.1 Lab Information

1.1.1 Testing Location

These measurements tests were conducted at the Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3rd Road, Bao'an District, Shenzhen, China.
Tel.: +86-755-27212361
Contact Email: info@towewireless.com

1.1.2 Test Facility / Accreditations

A2LA (Certificate Number: 7088.01)
This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

FCC Designation No.: CN1353
Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized as an accredited testing laboratory. Designation Number: CN1353.

ISED CAB identifier: CN0152
Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized by ISED as an accredited testing laboratory.
CAB identifier: CN0152
Company Number: 31000

1.2 Client Information

1.2.1 Applicant

Applicant:	Particle Industries, Inc.
Address:	548 Market St, PMB 34833, San Francisco, CA 94104, USA

1.2.2 Manufacturer

Manufacturer:	Particle Industries, Inc.
Address:	548 Market St, PMB 34833, San Francisco, CA 94104, USA

1.3 Product Information

EUT Description:	Tachyon		
Model:	TACH4ROW, TACH8ROW		
Brand:	Particle		
Hardware Version:	V1.2		
Software Version:	1.0.160		
IMEI:	863174060028643		
Operating frequency bands:	Band	TX Frequency	RX Frequency
	WCDMA Band I	1920MHz ~ 1980MHz	2110MHz ~ 2170MHz
	WCDMA Band V	824MHz ~ 849MHz	869MHz ~ 894MHz
	WCDMA Band VIII	880MHz ~ 915MHz	925MHz ~ 960MHz
Type of Modulation:	QPSK, 16QAM, 64QAM		
Antenna Type:	☐ External, ☒ Integrated		
Antenna Gain:	Band	Ant (dBi)	
	WCDMA Band I	-0.4	
	WCDMA Band V	-0.5	
	WCDMA Band VIII	-2.7	

Remark:
1. The above EUT's information was declared by applicant, please refer to the specifications or user's manual for more detailed description.
2. According to the customer's Letter of model difference, TACH4ROW and TACH8ROW are identical with each other, except for RAM and model number difference.

2 Test Configuration

2.1 Standards Specification

No.	Reference Standards	Standards Title
1	ETSI EN 301 908-2 V13.1.1	IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 2: CDMA Direct Spread (UTRA FDD) User Equipment (UE)
2	ETSI TS 134 121-1 V12.1.0	Universal Mobile Telecommunications System(UMTS); User Equipment (UE) conformance specification; Radio transmission and reception(FDD); Part 1: Conformance specification (3GPP TS 34.121-1 version 12.1.0 Release 12)

2.2 Test Channel

Band I					
Uplink			Downlink		
Channel Number		Frequency (MHz)	Channel Number		Frequency (MHz)
Low channel	9613	1922.6	Low channel	10563	2112.6
Middle channel	9750	1950.0	Middle channel	10700	2140.0
High channel	9887	1977.4	High channel	10837	2167.4
Band V					
Uplink			Downlink		
Channel Number		Frequency (MHz)	Channel Number		Frequency (MHz)
Low channel	4132	826.4	Low channel	4357	871.4
Middle channel	4182	836.4	Middle channel	4407	881.4
High channel	4233	846.6	High channel	4458	891.6
Band VIII					
Uplink			Downlink		
Channel Number		Frequency (MHz)	Channel Number		Frequency (MHz)
Low channel	2713	882.6	Low channel	2938	927.6
Middle channel	2788	897.6	Middle channel	3013	942.6
High channel	2862	912.4	High channel	3087	957.4

2.3 Test Mode

Modulation Type	Description
TM 1 mode:	Keep the EUT communication with simulated station in RMC mode
TM 2 mode:	Keep the EUT communication with simulated station in HSDPA mode
TM 3 mode:	Keep the EUT communication with simulated station in HSUPA mode

2.4 Test Environment

Relative Humidity	45-56 % RH Ambient	
Condition	**Temperature(℃)**	**Voltage(V)**
NTNV	25	4.00
LTLV	-20	3.55
LTHV	-20	4.40
HTLV	60	3.55
HTHV	60	4.40
Remark:		
NTNV Normal Temperature, Normal Voltage		
LTLV Low Temperature, Low Voltage		
LTHV Low Temperature, High Voltage		
HTLV High Temperature, Low Voltage		
HTHV High Temperature, High Voltage		

2.5 Support Unit used in test

The EUT has been tested as an independent unit.

2.6 Test RF Cable

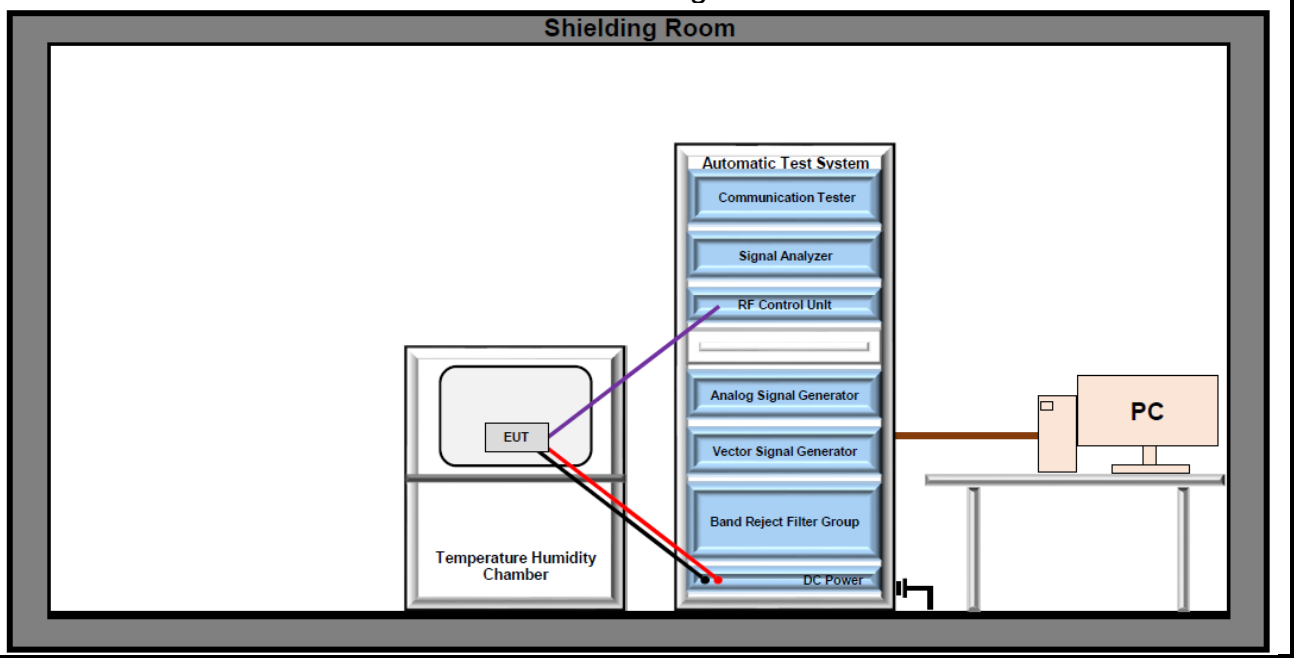
For all conducted test items: The offset level is set spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.

2.7 Modifications

No modifications were made during testing.

2.8 Test Setup Diagram

Conducted Configuration:



3 Equipment and Measurement Uncertainty

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, whichever is less, and where applicable is traceable to recognized national standards.

3.1 Test Equipment List

RF Conducted 05					
Description	**Manufacturer**	**Model**	**S.N.**	**Last Due**	**Cal Due**
Wideband Radio Communication Tester	R&S	CMW500	151064	2025/03/14	2026/03/13
Signal Analyzer	Keysight	N9020A	US46470468	2025/03/14	2026/03/13
Signal Generator	Keysight	N5182A	MY50144316	2025/03/11	2026/03/10
Signal Generator	R&S	SMR20	100621	2025/03/11	2026/03/10
Hygrometer	BingYu	HTC-1	N/A	2025/05/29	2027/05/28
Band Reject Filter Group	Tonscend	JS0806-F	23A806F0647	N/A	N/A
RF Control Unit	Tonscend	JS0806-1	22L8060639	N/A	N/A
Measurement Software	Tonscend	TS1120 V3.1.46	10763	N/A	N/A

3.2 Measurement Uncertainty

Parameter	**U_{lab}**
Output power	0.74dB

Uncertainty figures are valid to a confidence level of 95%

4 Test Results

The following tables reflect the requirements of the relevant specification and show the tests performed. Result files verifying these verdicts are available for inspection at TOWE.

The Max Output Power of WCDMA			
WCDMA Band I	Channel	Power(dBm)	Tune up(dBm)
	9887	22.54	25.00
WCDMA Band V	Channel	Power(dBm)	Tune up(dBm)
	4182	23.96	25.00
WCDMA Band VIII	Channel	Power(dBm)	Tune up(dBm)
	2713	24.01	25.00

4.1 Test Result Summary

EN 301 908-2	ETSI TS 134 121-1	Testing Condition	Test Items	Result		
				Band I	Band V	Band VIII
4.2.2.1	5.2	NTNV	Transmitter maximum output power	PASS	PASS	PASS
		LTLV		PASS	PASS	PASS
		LTHV		PASS	PASS	PASS
		HTLV		PASS	PASS	PASS
		HTHV		PASS	PASS	PASS
Remark: During the test, the preliminary test was performed in Transmitter output power with five conditions (NTNV, HTHV, HTLV, LTHV and LTLV), and the test data of the worst-case condition was recorded in this report.						

~The End~