





RF EXPOSURE REPORT

Applicant	Particle Industries, Inc
Address	126 Post St,4th floor, San Francisco, CA 94108 USA

Manufacturer or Supplier	Particle Industries, Inc
Address	126 Post St,4th floor, San Francisco, CA 94108 USA
Product	Tracker One LTE M1
Brand Name	Particle
Model	ONE402M
Additional Models & Model Difference	ONE404M, ONE402M-NB, ONE404M-NB
Date of tests	Aug. 18, 2020 ~ Sep. 10, 2020

- IC RSS-102 Issue 5
- IEEE C95.3

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

Tested by Breeze Jiang Senior Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	 Date: Dec. 21, 2020

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
IM2009WDG0427	Original release	Dec. 21, 2020

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1. CERTIFICATION

IC:	20127-ONE40X
PRODUCT:	Tracker One LTE M1
BRAND NAME:	Particle
MODEL NO.:	ONE402M
ADDITIONAL MODELS:	ONE404M, ONE402M-NB, ONE404M-NB
TEST SAMPLE:	N/A
APPLICANT:	Particle Industries, Inc
STANDARDS:	IC RSS-102 Issue 5
	IEEE C95.3

Note: Additional models ONE404M, ONE402M-NB, ONE404M-NB are identical with the test model ONE402M except the model number for marketing purpose.



2. RF EXPOSURE LIMIT

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (W/m ²)	AVERAGE TIME (minutes)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
48-300	22.06	0.05852	1.291	6
300-6000	3.142*F ^{0.3417}	0.008335*F ^{0.3417}	0.02619*F ^{0.6834}	6

F = Frequency in MHz

3. MPE CALCULATION FORMULA

$$Pd = (Pout * G) / (4 * pi * r^2)$$

where

Pd = power density in W/m²

Pout = output power to antenna in W

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in m

4. CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.



5. ANTENNA GAIN

The antennas provided to the EUT, please refer to the following table:

Transmitter Circuit	Peak Gain (dBi)	Antenna Type
BT-LE	1.71	FPCB Antenna
	0	Ceramic Antenna
WIFI	1.71	FPCB Antenna

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

The tuned conducted Average Power (declared by client)

Mode	Target Power (dBm)	Tolerance (dBm)	Lower Tolerance (dBm)	Upper Tolerance (dBm)
BT-LE (GFSK)	8	+1	7	9
802.11b	16	+1	15	17
802.11g	16	+1	15	17
802.11n HT20	16	+1	15	17
802.11n HT40	16	+1	15	17

The measured conducted Average Power

Mode	Frequency (MHz)	Averaged Power (dBm)
BT-LE (GFSK)	2440	7.81
802.11b	2462	16.60
802.11g	2462	15.97
802.11n HT20	2462	15.93
802.11n HT40	2422	15.99

FREQUENCY BAND (MHz)	MAX AVERAGE POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (m)	POWER DENSITY (W/m ²)	LIMIT (W/m ²)
BT 2402-2480	9	2.0	0.2	0.02343	5.35
WiFi 2412-2462	17	2.0	0.2	0.14782	5.37



CONCLUSION:

The BT and WLAN can transmit simultaneously, the formula of calculated the MPE is:

$$\text{CPD1} / \text{LPD1} + \text{CPD2} / \text{LPD2} + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$(0.02343/5.35)+(0.14782/5.37) = 0.0319 < 1, \text{ which is less than the "1" limit.}$$

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