

RF Exposure Evaluation Report

Product : Wio RP2040 Module
Trade mark : Seeed Studio
Model/Type reference : WIORP2040-A
Serial Number : N/A
Report Number : EED32N80423302
FCC ID : Z4T-WIORP2040-A
Date of Issue : Jul. 13, 2021
Test Standards : 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06
Test result : PASS

Prepared for:

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Prepared by:

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Jul. 13, 2021



Check No.:3143310521

2 Version

| Version No. | Date | Description |
|-------------|---------------|-------------|
| 00 | Jul. 13, 2021 | Original |
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4 General Information

4.1 Client Information

| | |
|--------------------------|---|
| Applicant: | Seeed Technology Co., Ltd. |
| Address of Applicant: | 9F, G3 Building, TCL International E City, Zhongshanyuan Road, Nanshan District, Shenzhen, Guangdong Province, P.R.C |
| Manufacturer: | Seeed Technology Co., Ltd. |
| Address of Manufacturer: | 9F, G3 Building, TCL International E City, Zhongshanyuan Road, Nanshan District, Shenzhen, Guangdong Province, P.R.C |
| Factory: | Shenzhen Xinxian Technology Co |
| Address of Factory: | Limited / F5, Building B17, Hengfeng Industrial City, No. 739 Zhoushi Rd, Baoan District, Shenzhen, Guangdong, P.R.C. |

4.2 General Description of EUT

| | |
|----------------------------------|-----------------------|
| Product Name: | Wio RP2040 Module |
| Model No.: | WIORP2040-A |
| Test model: | WIORP2040-A |
| Trade Mark: | Seeed Studio |
| EUT Supports Radios application: | WIFI: 2412MHz~2462MHz |

4.3 Product Specification subjective to this standard

| | |
|---|---|
| Frequency Range: | WIFI: 2412MHz~2462MHz |
| Modulation Type: | IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g :OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20) : OFDM (64QAM, 16QAM,QPSK,BPSK) |
| Test Power Grade: | Default |
| Test Software of EUT: | EspRFTTestTool_v2.6_Manual |
| Antenna Type: | PCB antenna |
| Antenna Gain: | -8.62dBi |
| Power Supply: | DC 5V |
| Max Conducted Peak Output Power: | 11.62dBm The Max Conducted Peak Output Power data refer to the report EED32N80423301 |
| Sample Received Date: | May. 31, 2021 |
| Sample tested Date: | Jun. 16, 2021 to Jul. 07, 2021 |
| Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified. N/A ¹⁾ The Product is powered battery. Model No.: WIORP2040-A | |

4.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.

5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

5.2 Maximum Permissible Exposure

Substituting the MPE safe distance using $d = 20$ cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

WIFI:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm ² | Limit (mW/cm ²) |
|-----|-----------|--------|-------------|--------|---------------------------------------|-----------------------------|
| 1 | 2412 | 14.521 | 0.1374 | 20 | 0.0004 | 1 |

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No. EED32N80423301 for EUT external and internal photos.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***