EN IEC 62311:2020
EN 50665:2017
ASSESSMENT REPORT

M5Stack Technology Co., Ltd

5F, Tangwei Stock Commercial Building, Youli Road, Bao'an District, Shenzhen, China

Tested Model: ATOMS3

Report Type: Original Report	**Product Name:** M5ATOMS3

Project Engineer:	Stone Zhang
Report Number:	RSHE220928001-01C
Report Date:	2022-10-14
Reviewed By:	Kyle Xu
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248, Chenghu Road, Development Zone, Yushan, Kunshan, Suzhou, Jiangsu, China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	M5Stack Technology Co., Ltd
Tested Model:	ATOMS3
Series Model:	ATOMS3-LITE
Model Difference:	See declaration letter
Product Name:	M5ATOMS3
Power Supply:	DC 5V from USB Port
Maximum EIRP:	2.4G Wi-Fi: 802.11b: 18.12 dBm 802.11g: 18.23 dBm 802.11 n20: 17.85 dBm 802.11 n40: 17.67 dBm BLE:8.14 dBm
RF Function:	2.4G Wi-Fi/BLE
Operating Band /Frequency:	2.4G Wi-Fi: 2412-2472 MHz (802.11b/g/n20), 2422~2462 MHz (802.11n40) BLE:2402-2480 MHz
Channel Number:	2.4G Wi-Fi: 13(802.11b/g/n20), 9(802.11n40) BLE:2402-2480 MHz
Channel Separation:	2.4G Wi-Fi:5 MHz BLE:2 MHz
Modulation Type:	2.4G Wi-Fi:DSSS, OFDM BLE:GFSK
★Maximum Antenna Gain:	2.0 dBi

Note: The maximum antenna gain was declared by the manufacturer.

All measurement and test data in this report was gathered from production sample serial number: RSHE220928001-1 (Assigned by BACL(Kunshan). The EUT was received on 2022-09-28).

Objective

This report is prepared on behalf of *M5Stack Technology Co., Ltd* in accordance with EN 50665:2017, Generic standard for assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz) and EN IEC 62311:2020, Generic standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (0 Hz–300 GHz) is to demonstrate the compliance of apparatus with the basic restrictions or reference levels on exposure of the general public related to electric, magnetic, electromagnetic fields as well as induced and contact current

The objective is to determine the compliance of EUT with EN IEC 62311:2020, EN 50665:2017.

Test Methodology

All measurements contained in this report were conducted with EN IEC 62311:2020, EN 50665:2017.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Technical Requirements Specification in EN IEC 62311:2020

General Description of Applied Standards

EN IEC 62311 Generic standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (0 Hz–300 GHz) is to demonstrate the compliance of apparatus with the basic restrictions or reference levels on exposure of the general public related to electric, magnetic, electromagnetic fields as well as induced and contact current.

RF Exposure Evaluation

Limit:

According to EN IEC 62311, the criteria listed in the below table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified table 2 of Council Recommendation 1999/519/EC.

Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density S_{eq} (W/m²)
0-1 Hz	—	$3,2 \times 10^4$	4×10^4	—
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8-25 Hz	10 000	4 000/f	5 000/f	—
0,025-0,8 kHz	250/f	4/f	5/f	—
0,8-3 kHz	250/f	5	6,25	—
3-150 kHz	87	5	6,25	—
0,15-1 MHz	87	0,73/f	0,92/f	—
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	—
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046\ f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

Notes:

1. *f* as indicated in the frequency range column.

Test method

Far Field Calculation Formula

$$E = \frac{\sqrt{30PG(\theta,\phi)}}{r}$$

G = antenna gain relative to an isotropic antenna
θ, ϕ = elevation and azimuth angles to point of investigation
r = distance from observation point to the antenna

Test Data

Function	Frequency Range (MHz)	Tune-up EIRP (dBm)	Tune-up EIRP (mW)	E-Field Strength (V/m)	E-Field Limit (V/m)	Result
2.4G Wi-Fi	2412-2472	18.5	70.79	7.29	61	Pass
	2422-2462	18.0	63.10	6.88	61	Pass
BLE	2402-2480	8.5	7.08	2.30	61	Pass

Note:

1. Antenna Gain (numeric): 2.0dBi (1.58) for 2.4G Wi-Fi/BLE
2. The distance from observation point to the antenna is 20cm.

EXHIBIT A - EUT PHOTOGRAPHS

Refer to report No.: RSHE220928001-01A

Declarations

1.Bay Area Compliance Laboratories Corp. (Kunshan) is not responsible for authenticity of any test data provided by the applicant. Test data from the applicant that may affect test results are marked with an asterisk "★". The model number, product name, address, trademark, etc. from the applicant are not considered as test data.

2.Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested.

3.Unless required by the rule provided by the applicant or product regulations, then decision rule in this report did not consider the uncertainty.

4.The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor k=2 with the 95.45% confidence interval.

5.This report cannot be reproduced except in full, without prior written approval of Bay Area Compliance Laboratories Corp. (Kunshan).

6.This report is valid only with a valid digital signature. The digital signature may be available only under the adobe software above version 7.0.

*******END OF REPORT*******