

TEST REPORT

Report No.: BCTC2111530025-1E

Applicant: ROCKPI TRADING LIMITED

Product Name: Radxa Zero

Model/Type Ref.: D4E16H

Tested Date: 2021-11-05 to 2021-11-24

Issued Date: 2021-12-08

Shenzhen  Testing Co., Ltd.



Product Name: Radxa Zero
Trademark: N/A
Model/Type Ref.: D4E16H
D4E16T, D4E32H, D4E64H, D4E128H
Prepared For: ROCKPI TRADING LIMITED
Address: Room 11, 27/f, Ga wah international centre, 191 Javaroad, north point, Hong Kong, China
Manufacturer: ROCKPI TRADING LIMITED
Address: Room 11, 27/f, Ga wah international centre, 191 Javaroad, north point, Hong Kong, China
Prepared By: Shenzhen BCTC Testing Co., Ltd.
Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date: 2021-11-05
Sample tested Date: 2021-11-05 to 2021-11-24
Issue Date: 2021-12-08
Report No.: BCTC2111530025-1E
Test Standards: EN IEC 62311:2020
Test Results: PASS
Remark: This is RED Health test report.

Tested by:



Lei Chen/Project Handler

Approved by:



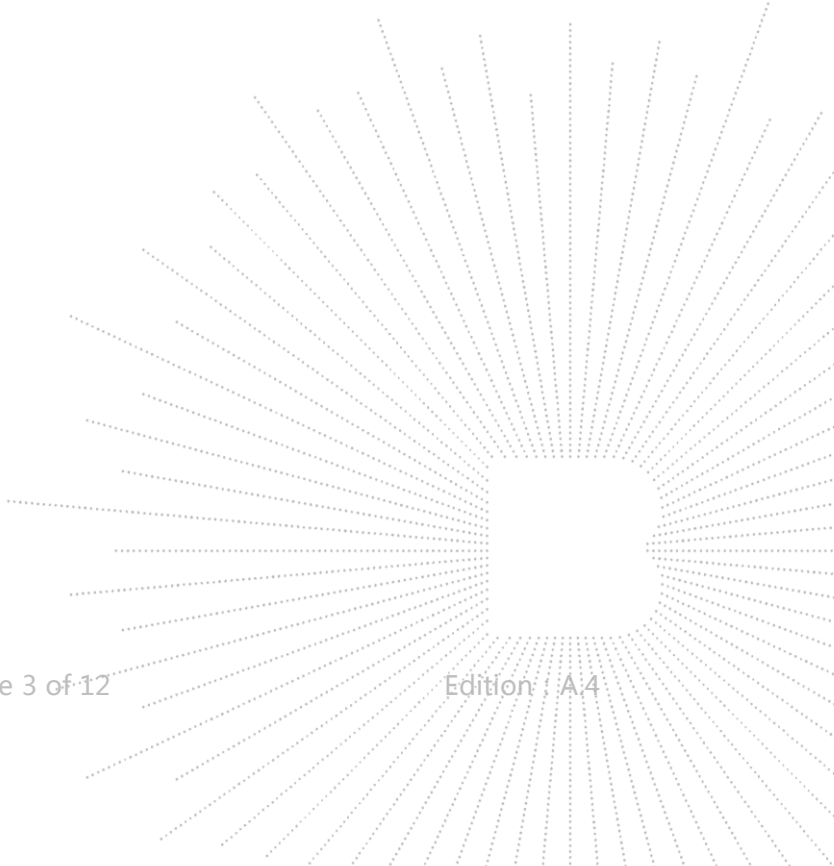
Zero Zhou/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

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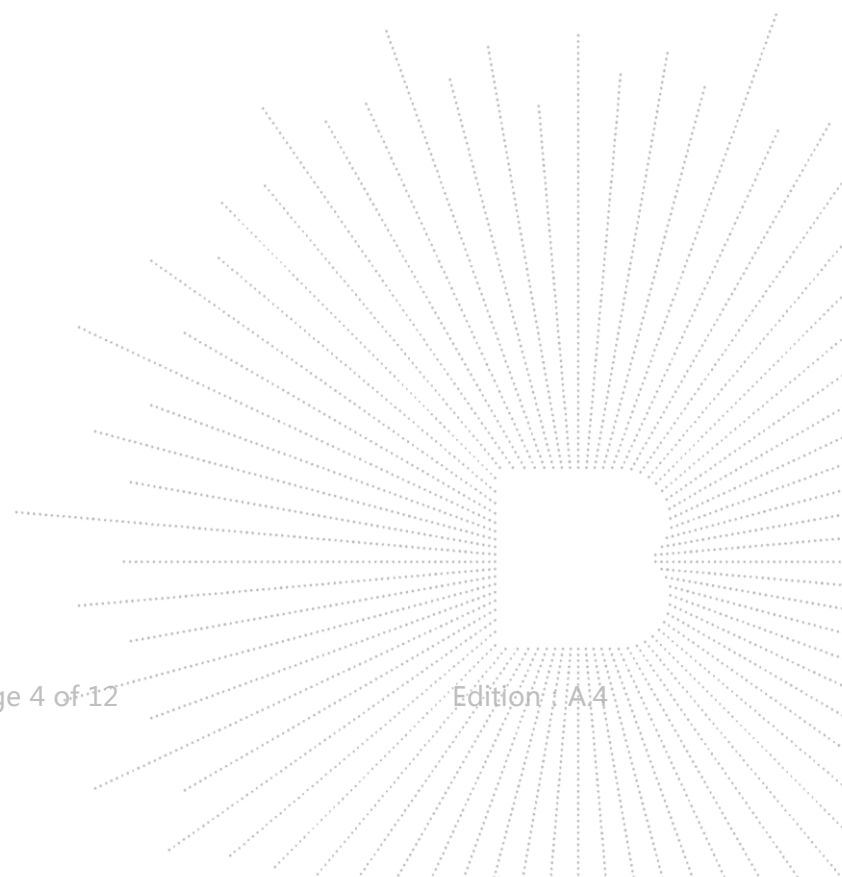
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(Note: N/A means not applicable)



1. Version

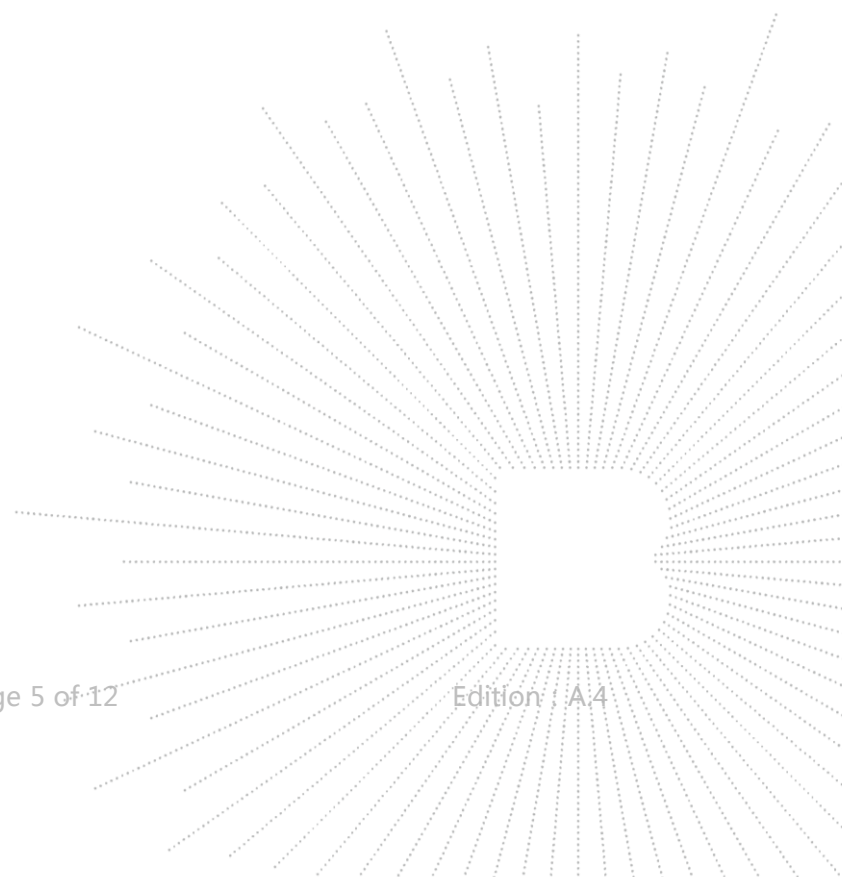
Report No.	Issue Date	Description	Approved
BCTC2111530025-1E	2021-12-08	Original	Valid



2. Product Information And Test Setup

2.1 Product Information

Model/Type Ref.:	D4E16H D4E16T, D4E32H, D4E64H, D4E128H
Model differences:	All the model are the same circuit and RF module, except model names.
Bluetooth Version:	BT 5.0
Wi-Fi Specification:	IEEE 802.11a/b/g/n/ac
Operation Frequency:	Bluetooth(EDR): 2402-2480MHz Bluetooth(BLE): 2402-2480MHz WiFi (2.4G): IEEE 802.11b/g/n HT20: 2412-2472MHz WIFI(5.1G): IEEE 802.11a/n/ac HT20/HT40/HT80:5180-5240MHz
Max. RF output power:	Bluetooth(EDR): 5.74 dBm Bluetooth(BLE): 5.99 dBm WiFi (2.4G) :15.94 dBm WiFi (5.1G):13.97 dBm
Type of Modulation:	Bluetooth(EDR): GFSK, $\pi/4$ DQPSK, 8DPSK Bluetooth(BLE): GFSK WiFi (2.4G): DSSS, OFDM WIFI: DSSS, OFDM
Antenna installation:	Chip antenna
Antenna Gain:	Bluetooth: 2dBi WiFi (2.4G): 2dBi WiFi (5.1G): 2dBi
Ratings:	DC 5V from USB



3. Health Requirements

3.1 Limits

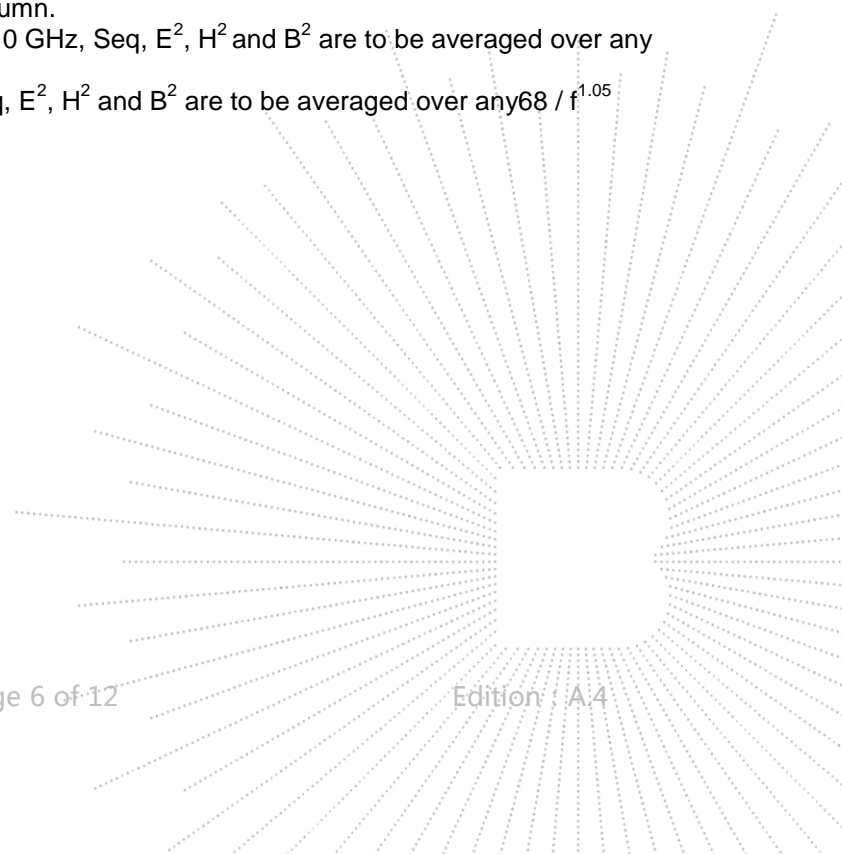
According to Council Recommendation: the criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation.

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

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μ T)	Equivalent plane wave power density Seq (W/m ²)
0-1 Hz	-	3.2×10^4	4×10^4	-
1-8 Hz	10000	$3.2 \times 10^4 / f^2$	$4 \times 10^4 / f^2$	-
8-25 Hz	10000	$4000 / f$	$5000 / f$	-
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	0.095	2
400-2000 MHz	$1.375 f^{1/2}$	$0.0037 f^{1/2}$	$0.0046 f^{1/2}$	$f / 200$
2-300 GHz	61	0.16	0.2	10

Note:

- f as indicated in the frequency range column.
- For frequencies between 100 kHz and 10 GHz, Seq, E², H² and B² are to be averaged over any six-minute period.
- For frequencies exceeding 10 GHz, Seq, E², H² and B² are to be averaged over any $68 / f^{1.05}$ minute period (f in GHz).



3.2 Exposure Evaluation

From Council Recommendation 1999/519/EC table 2, the maximum power density is 10 W/m².

Power density (S) is calculated by the following formula:

$$S = PG * \text{Duty factor} / 4\pi R^2$$

P = Peak Power Input to antenna (Watts)

G =Antenna Gain (numeric)

R = distance to the center of radiation of antenna (in meter) = 0.20 m

Note:

1) $P \text{ (Watts)} = (10^{(\text{dBm} / 10)}) / 1000$

2) $G \text{ (Antenna gain in numeric)} = 10^{(\text{Antenna gain in dBi} / 10)}$

3) Duty factor=1.0

4) $\pi = 3.142$

EDR:

Total Antenna Gain (dBi)	Total Antenna Gain (numeric)	Max. Total Output Power (dBm)	Max. Total Output Power (W)	Duty factor	Calculated RF Exposure (W/ m ²)	Limit (W/ m ²)
2.00	1.585	5.74	0.00375	1.00	0.0094	10

BLE:

Total Antenna Gain (dBi)	Total Antenna Gain (numeric)	Max. Total Output Power (dBm)	Max. Total Output Power (W)	Duty factor	Calculated RF Exposure (W/ m ²)	Limit (W/ m ²)
2.00	1.585	5.99	0.00397	1.00	0.0099	10

2.4GHz WIFI:

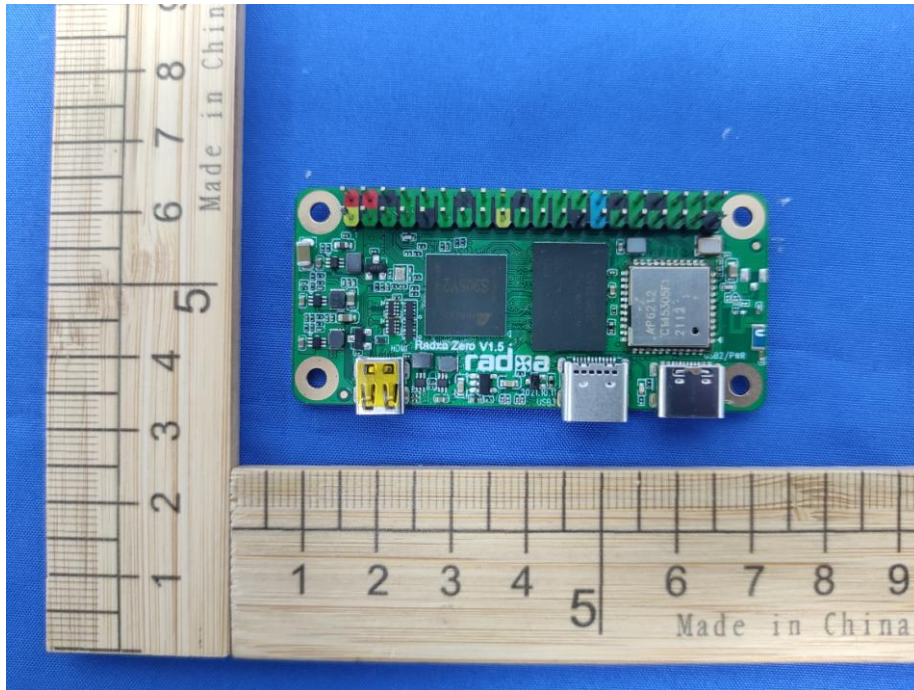
Total Antenna Gain (dBi)	Total Antenna Gain (numeric)	Max. Total Output Power (dBm)	Max. Total Output Power (W)	Duty factor	Calculated RF Exposure (W/ m ²)	Limit (W/ m ²)
2.00	1.585	15.94	0.03926	1.00	0.1238	10

5.1GHz WIFI

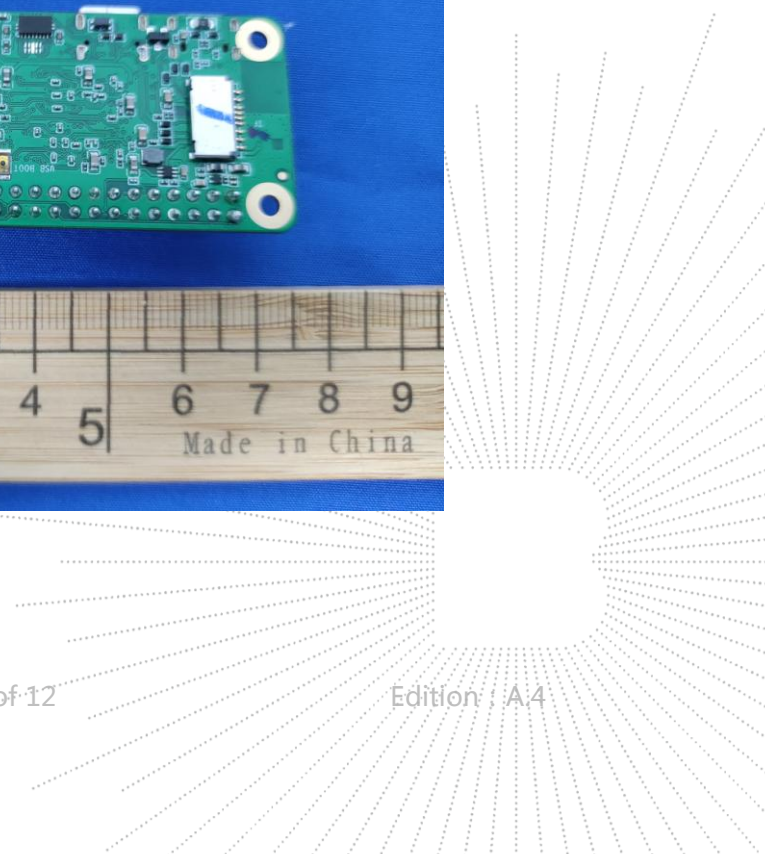
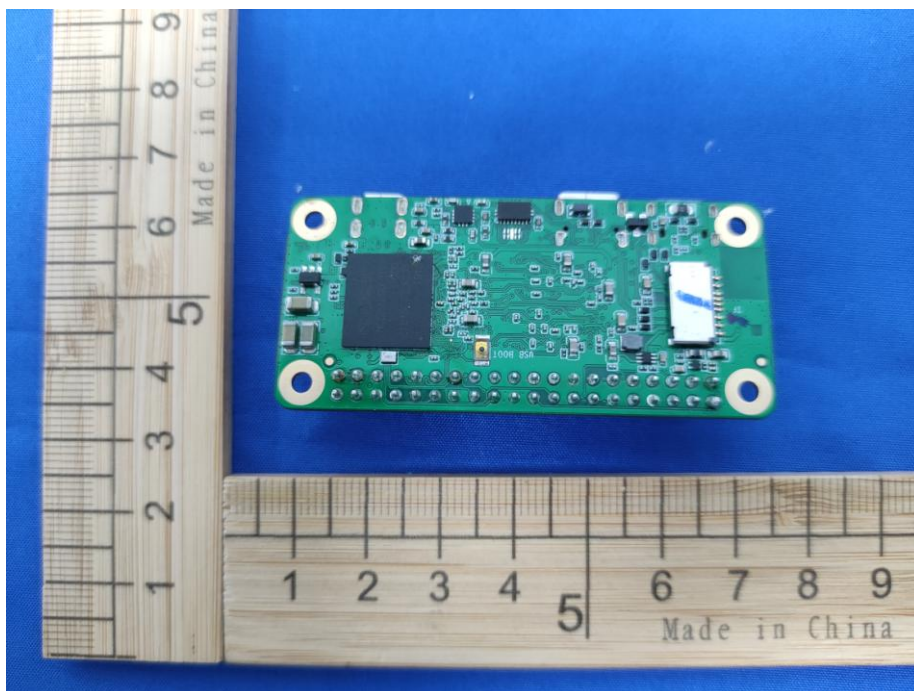
Total Antenna Gain (dBi)	Total Antenna Gain (numeric)	Max. Total Output Power (dBm)	Max. Total Output Power (W)	Duty factor	Calculated RF Exposure (W/ m ²)	Limit (W/ m ²)
2.00	1.585	13.97	0.02495	1.00	0.0786	10

4. EUT Photographs

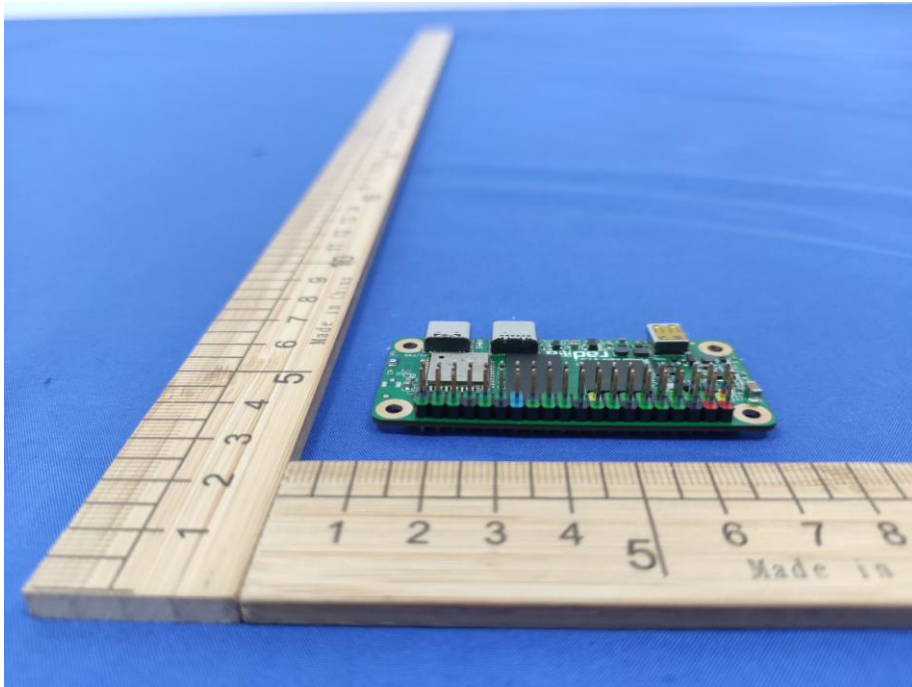
EUT Photo 1



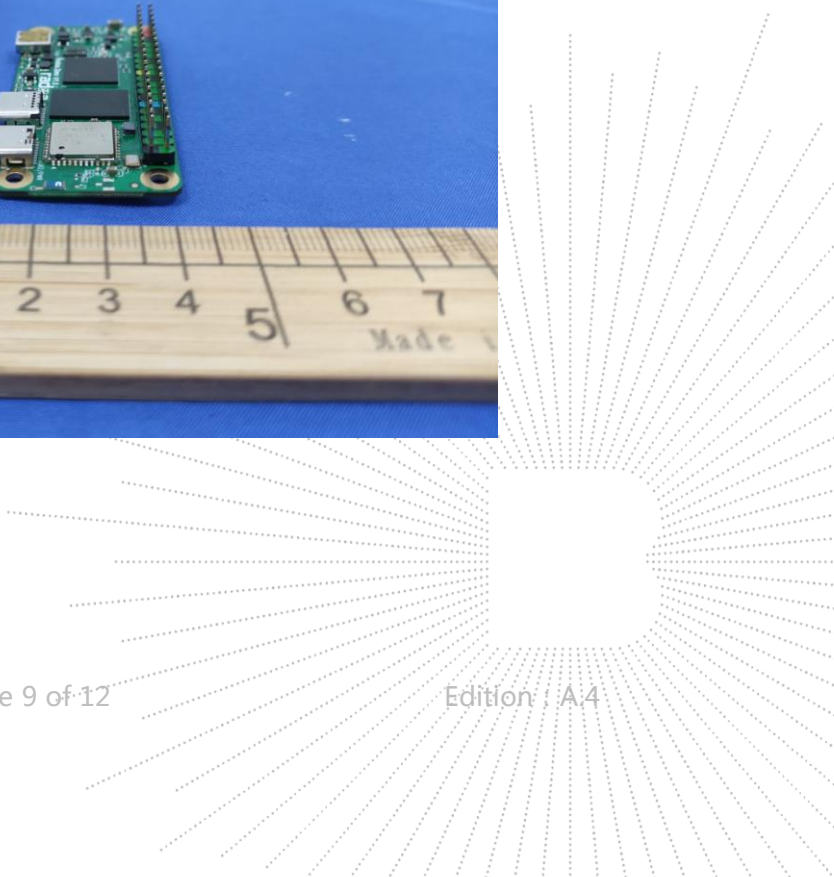
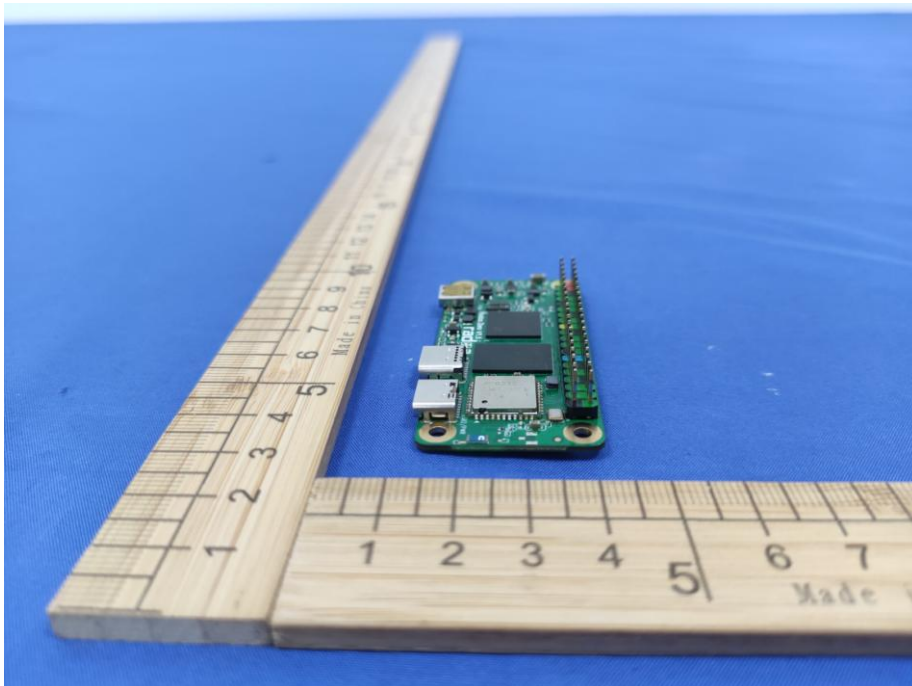
EUT Photo 2



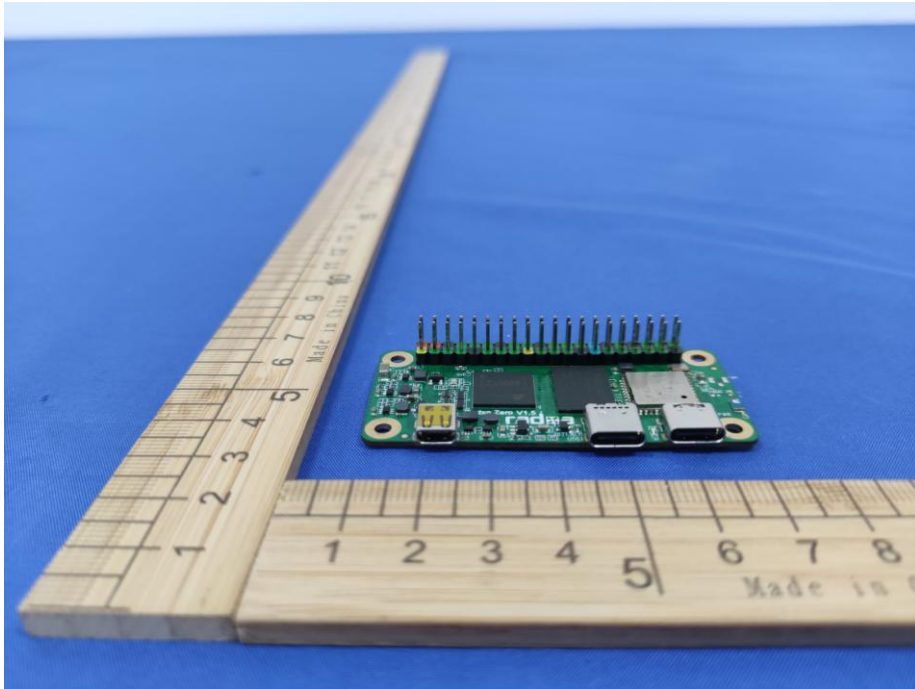
EUT Photo 3



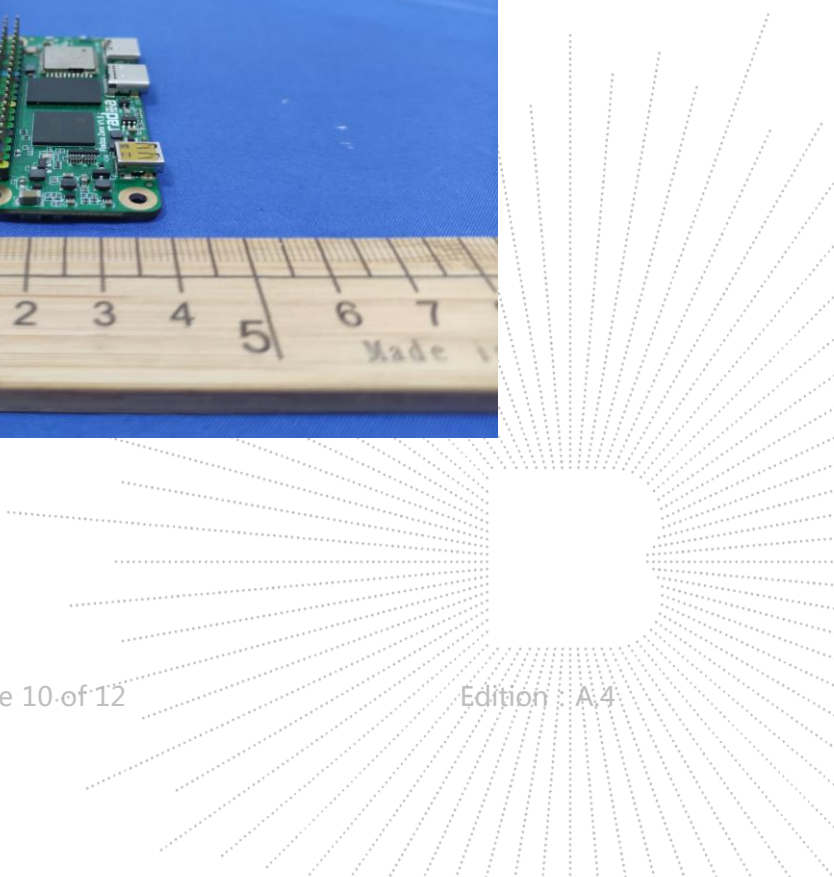
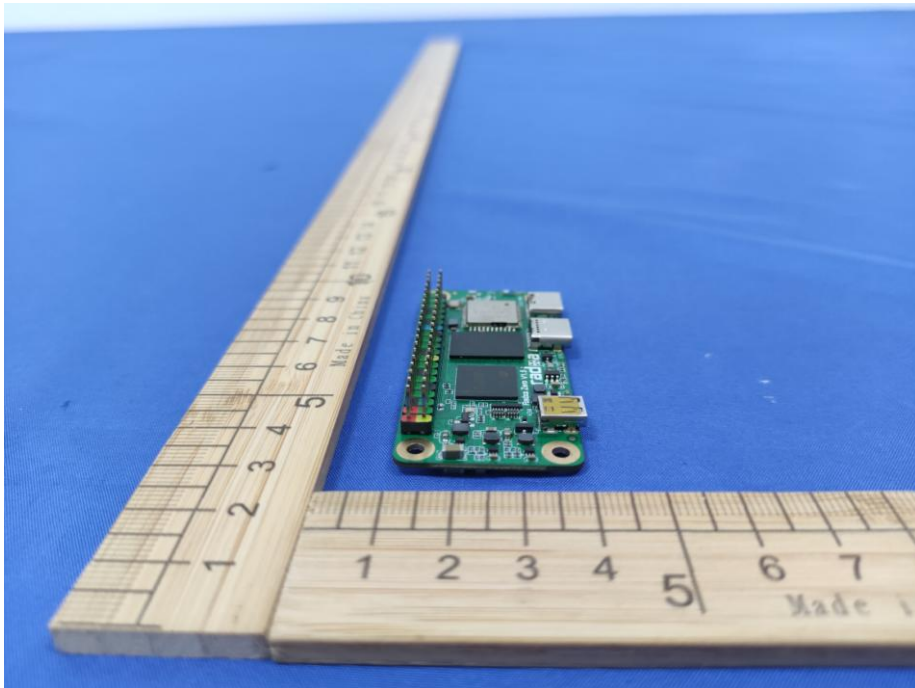
EUT Photo 4



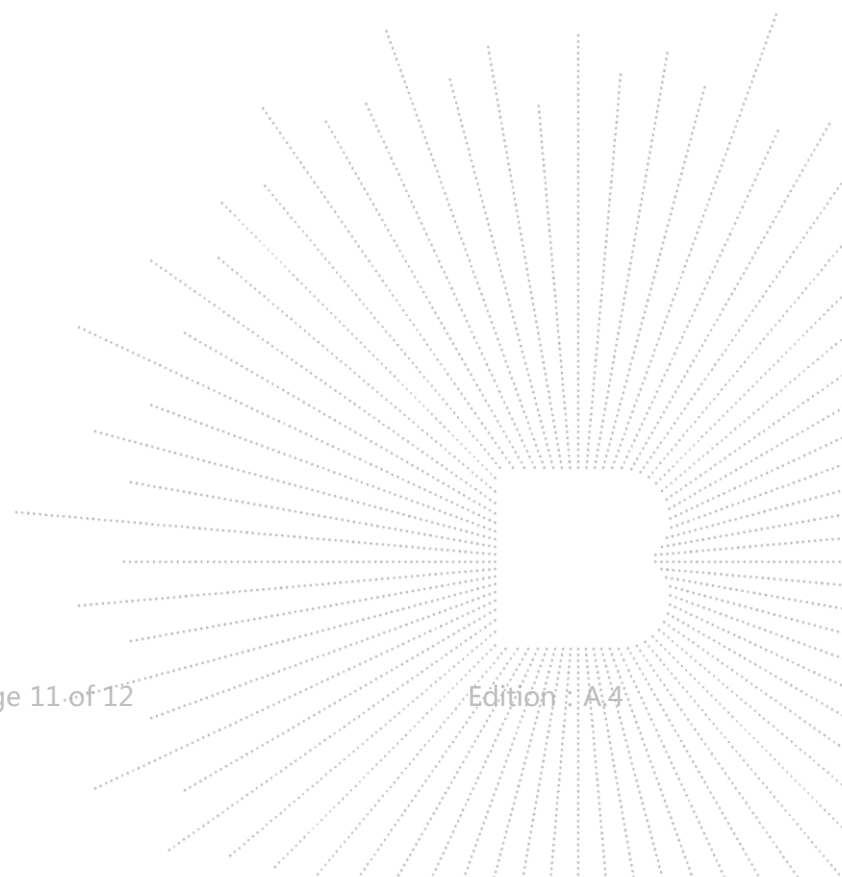
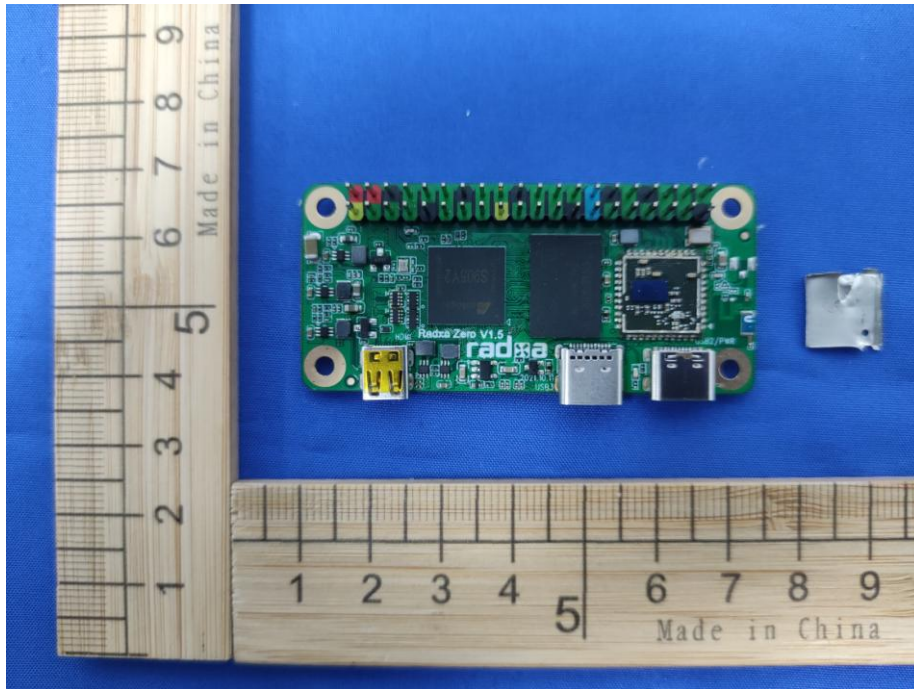
EUT Photo 5



EUT Photo 6



EUT Photo 7



STATEMENT

- 1.The equipment lists are traceable to the national reference standards.
- 2.The test report can not be partially copied unless prior written approval is issued from our lab.
- 3.The test report is invalid without stamp of laboratory.
- 4.The test report is invalid without signature of person(s) testing and authorizing.
- 5.The test process and test result is only related to the Unit Under Test.
- 6.The quality system of our laboratory is in accordance with ISO/IEC17025.
- 7.If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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***** END *****

