

TEST REPORT

Report No.: BCTC2207596553-1E

Applicant: ROCKPI TRADING LIMITED

Product Name: ROCK Pi 4/ROCK 4

Model/Type
reference: ROCK 4C Plus

Tested Date: 2022-07-19 to 2022-07-26

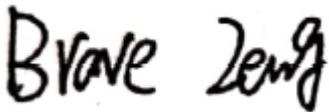
Issued Date: 2022-07-27

Shenzhen BCTC Testing Co., Ltd.



Product Name: ROCK Pi 4/ROCK 4
Trademark: N/A
Model/Type reference: ROCK 4C Plus
ROCK Pi 4C Plus, ROCK Pi 4C Pro, ROCK Pi 4C Max, ROCK 4C, ROCK 4C Plus,
ROCK 4C Pro, ROCK 4C Max
Prepared For: ROCKPI TRADING LIMITED
Address: Room 11, 27 / f, Ga wah international centre, 191 Javaroad, north point, Hong Kong
Manufacturer: ROCKPI TRADING LIMITED
Address: Room 11, 27 / f, Ga wah international centre, 191 Javaroad, north point, Hong Kong
Prepared By: Shenzhen BCTC Testing Co., Ltd.
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Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date: 2022-07-19
Sample tested Date: 2022-07-19 to 2022-07-26
Issue Date: 2022-07-27
Report No.: BCTC2207596553-1E
Test Standards: EN IEC 62311:2020
Test Results: PASS
Remark: This is Health test report.

Tested by:



Brave Zeng/ Project Handler

Approved by:



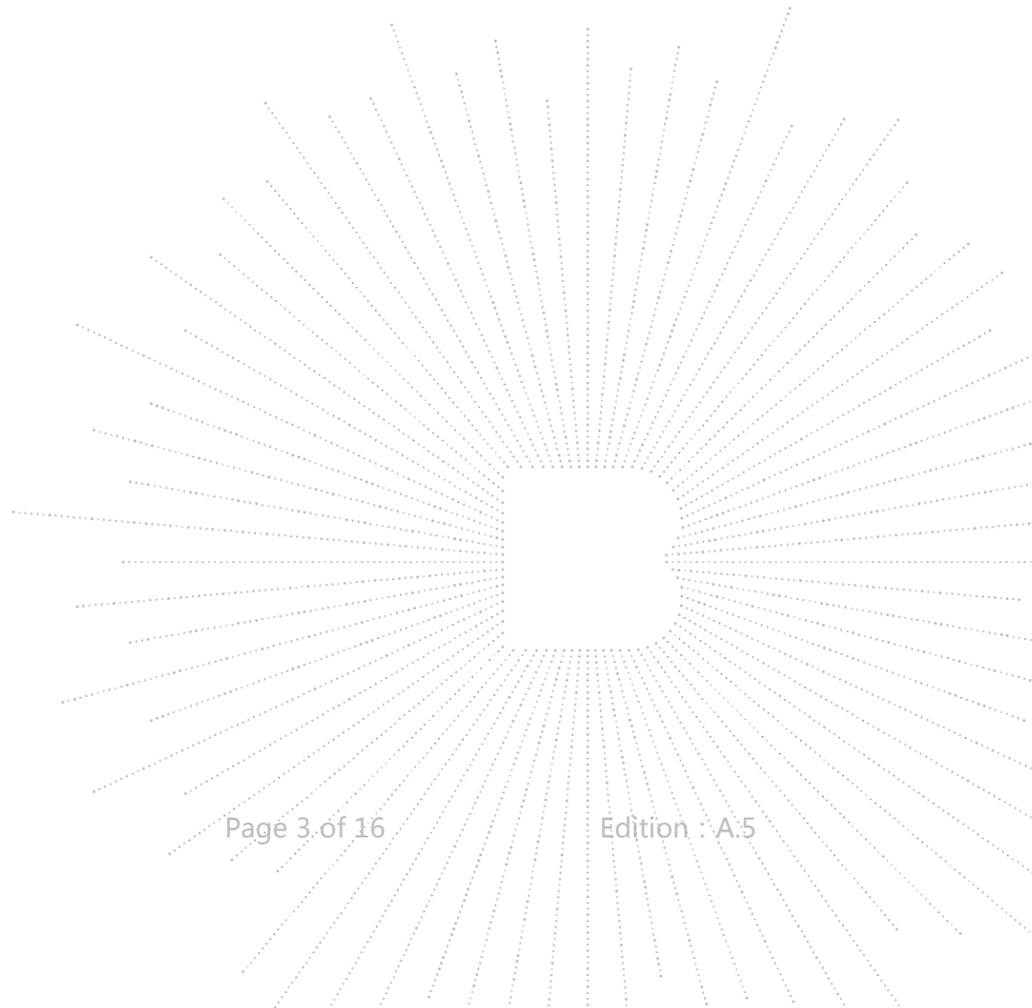
Zero Zhou/Reviewer

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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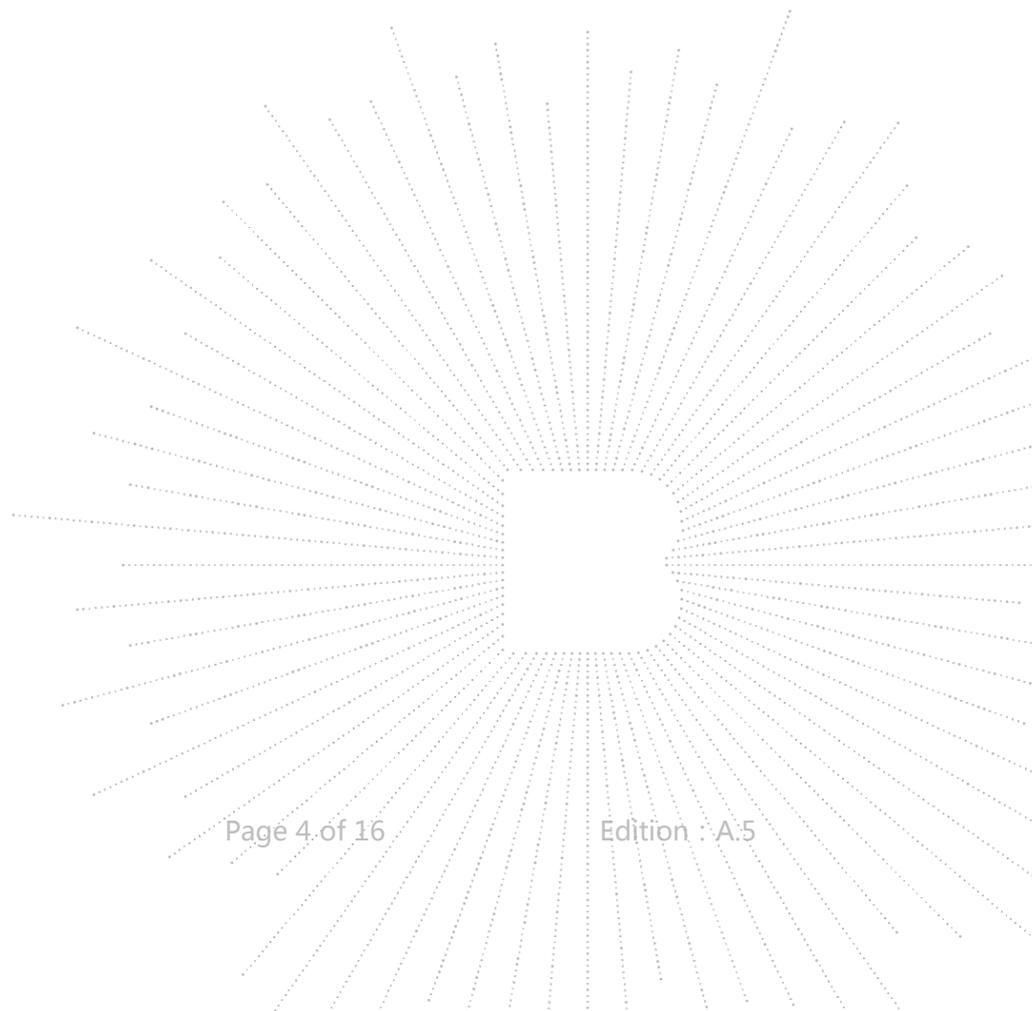
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(Note: N/A Means Not Applicable)



1. Version

Report No.	Issue Date	Description	Approved
BCTC2207596553-1E	2022-07-27	Original	Valid



2. Product Information And Test Setup

2.1 Product Information

Model/Type reference:	ROCK 4C Plus ROCK Pi 4C Plus, ROCK Pi 4C Pro, ROCK Pi 4C Max, ROCK 4C, ROCK 4C Plus, ROCK 4C Pro, ROCK 4C Max
Model differences:	All the model are the same circuit and RF module, except model names.
Hardware Version:	N/A
Software Version:	N/A
Operation Frequency:	Bluetooth(EDR): 2402-2480MHz Bluetooth (BLE): 2402-2480MHz WiFi (2.4G): IEEE 802.11b/g/n HT20: 2412-2472MHz WiFi (5.1GHz): IEEE 802.11a/n/ac HT20:5180MHz-5240MHz IEEE 802.11n/ac HT40:5190MHz-5230MH IEEE 802.11ac HT80:5210MHz
Max. RF output power:	Bluetooth(EDR): 3.28 dBm Bluetooth (BLE): 5.37 dBm WiFi (2.4GHz): 13.24 dBm WiFi (2.4GHz): 10.86 dBm
Type of Modulation:	Bluetooth(EDR): GFSK, $\pi/4$ DQPSK, 8DPSK Bluetooth (BLE): GFSK WiFi: DSSS, OFDM
Antenna installation:	FPC antenna
Antenna Gain:	2dBi
Ratings:	DC 5V From adapter

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:

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (W)	Duty factor	Calculated RF Exposure (W/ m ²)	Limit (W/ m ²)
2	1.585	3.28	0.002	1.00	0.0067	10

BLE :

Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (W)	Duty factor	Calculated RF Exposure (W/ m ²)	Limit (W/ m ²)
2	1.585	5.37	0.003	1.00	0.0109	10

2.4GHz WIFI:

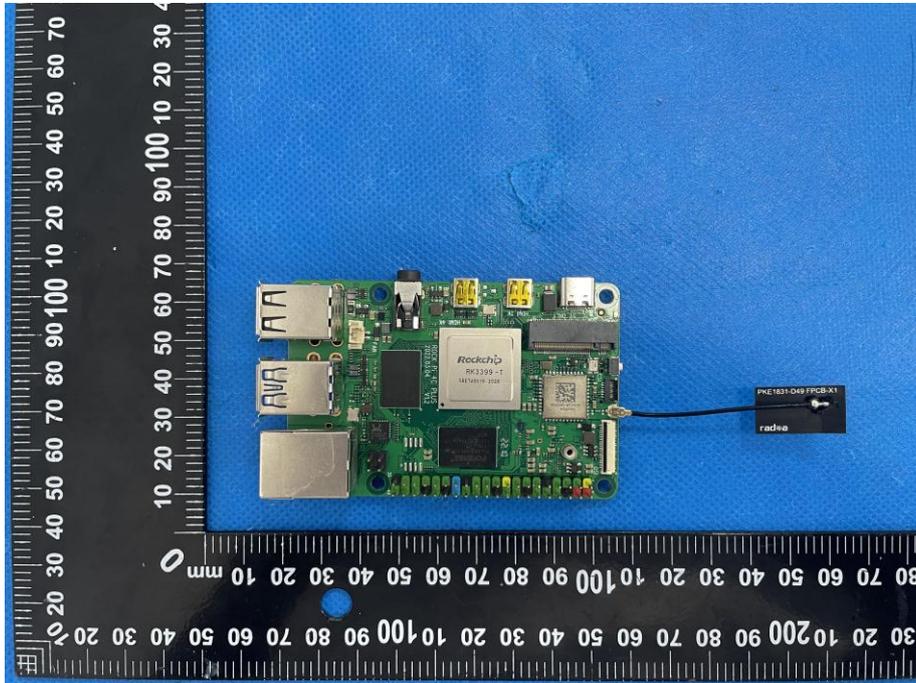
Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (W)	Duty factor	Calculated RF Exposure (W/ m ²)	Limit (W/ m ²)
2	1.585	13.24	0.021	1.00	0.0665	10

5.1GHz WIFI:

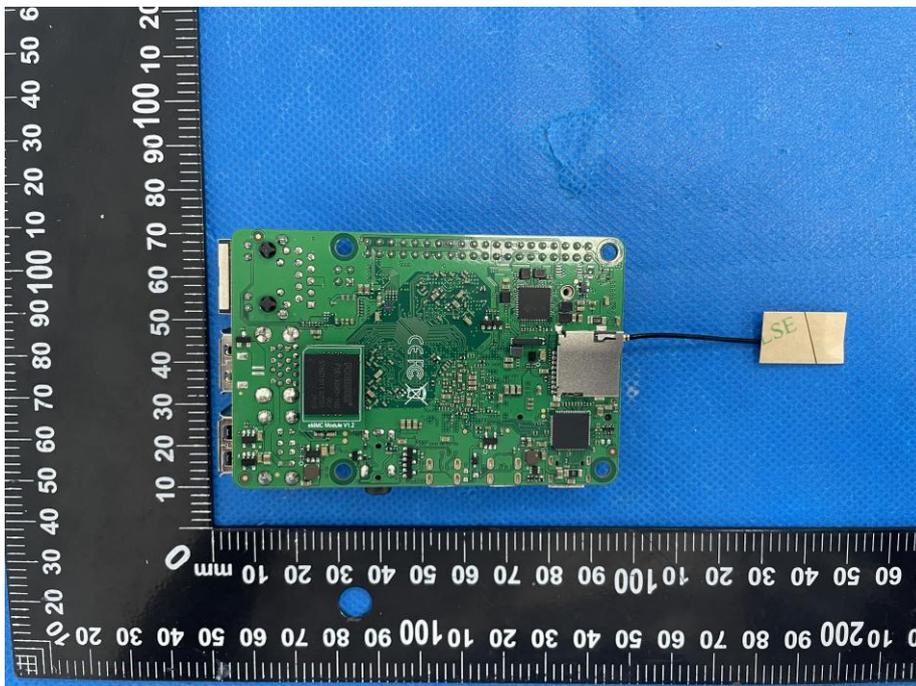
Antenna Gain (dBi)	Antenna Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (W)	Duty factor	Calculated RF Exposure (W/ m ²)	Limit (W/ m ²)
2	1.585	10.86	0.012	1.00	0.0384	10

4. EUT Photographs

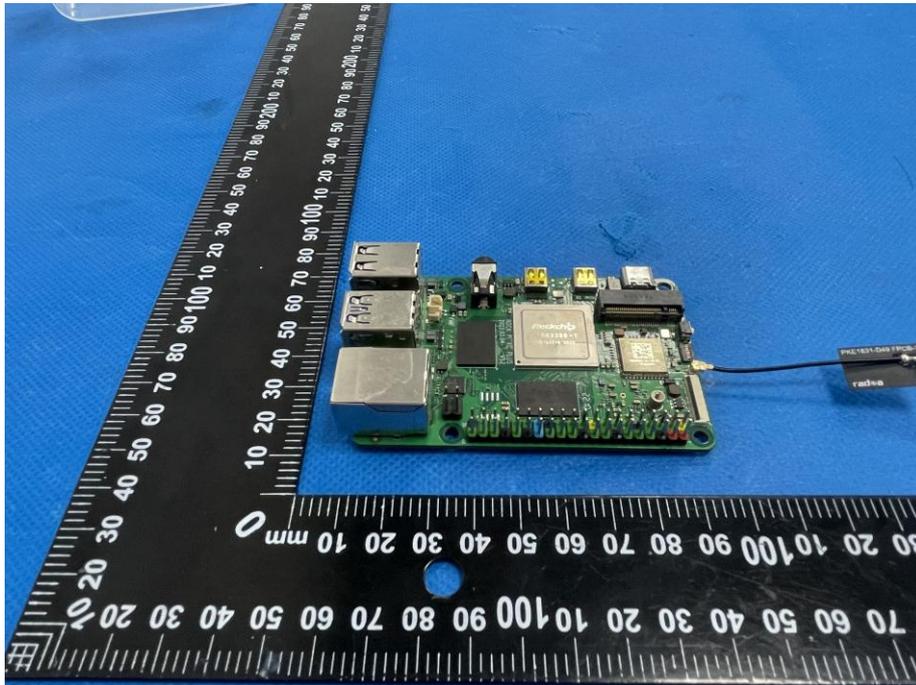
EUT Photo 1



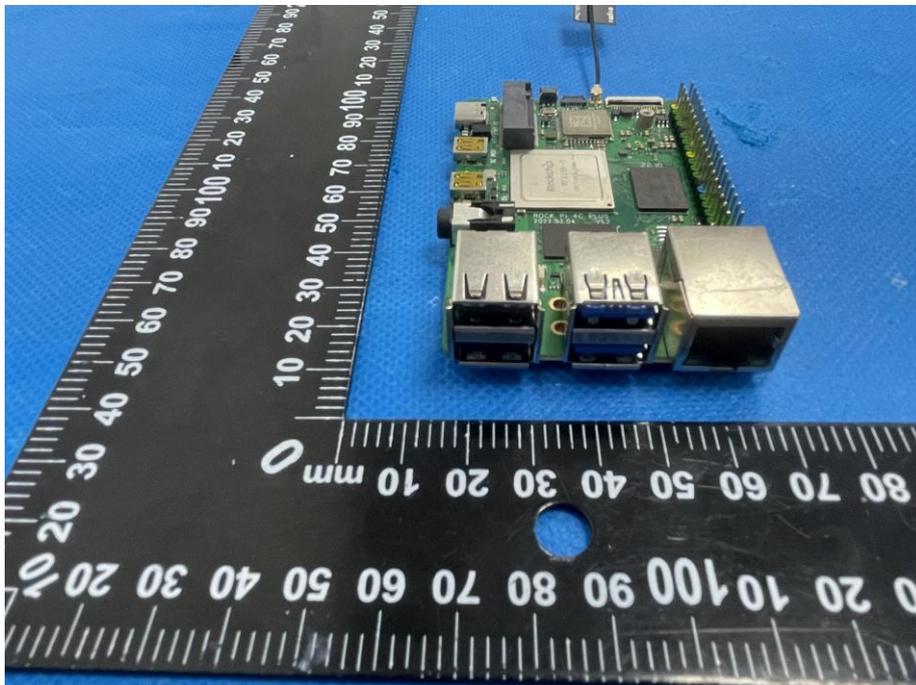
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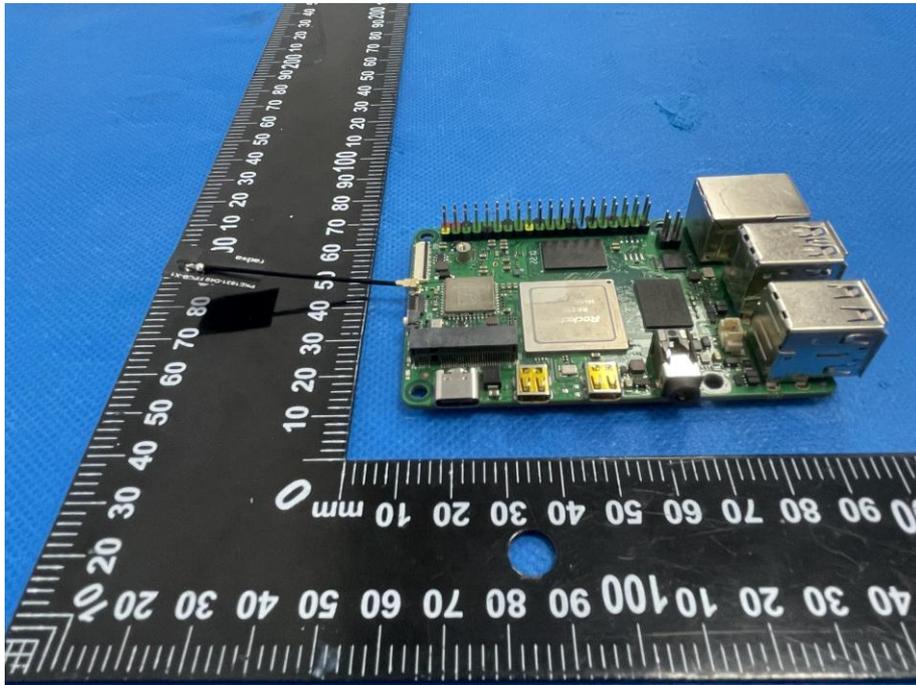
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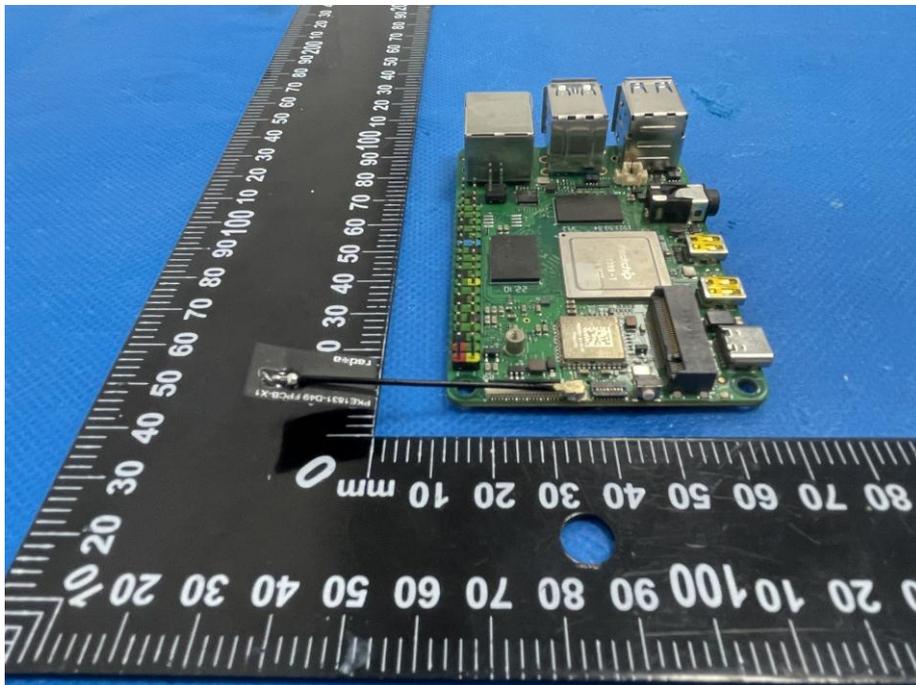
EUT Photo 4



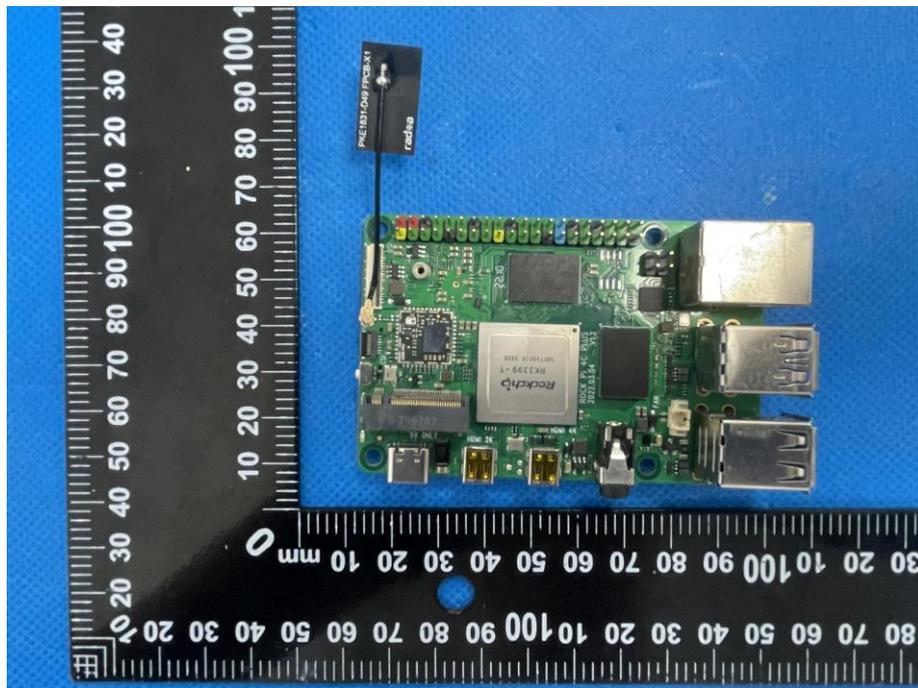
EUT Photo 5



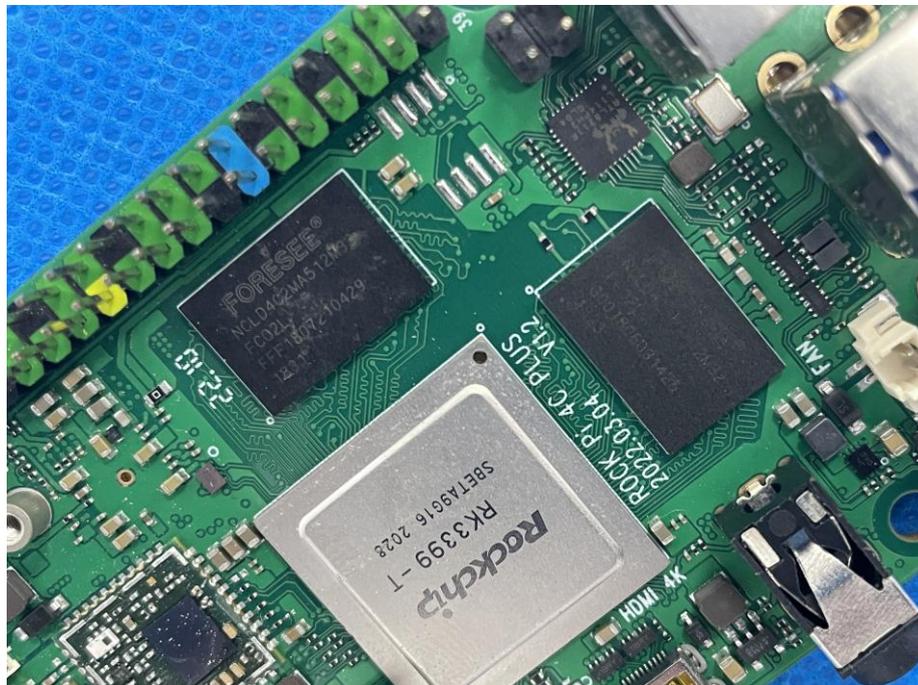
EUT Photo 6



EUT Photo 7



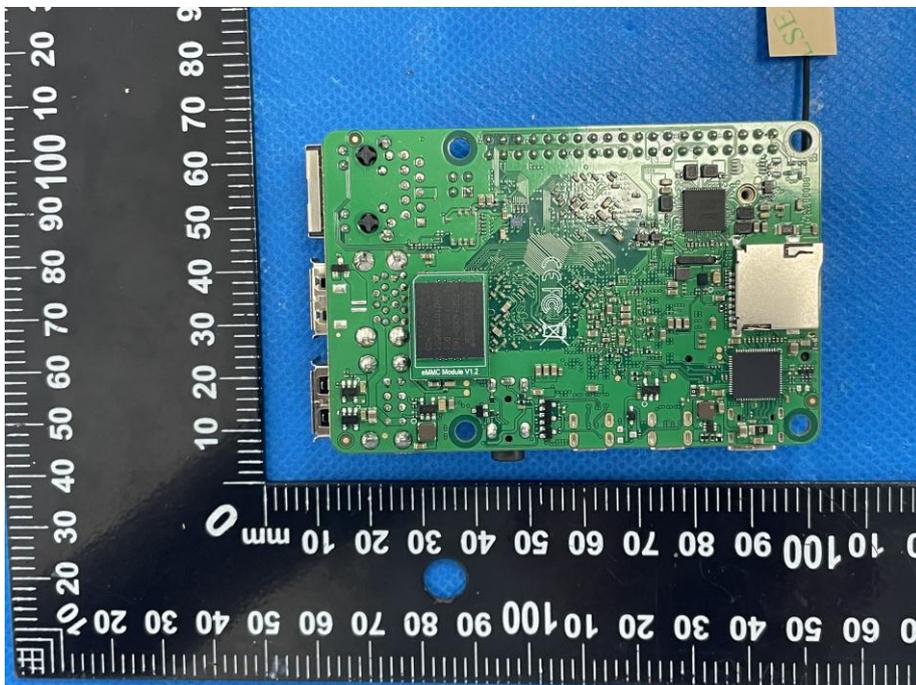
EUT Photo 8



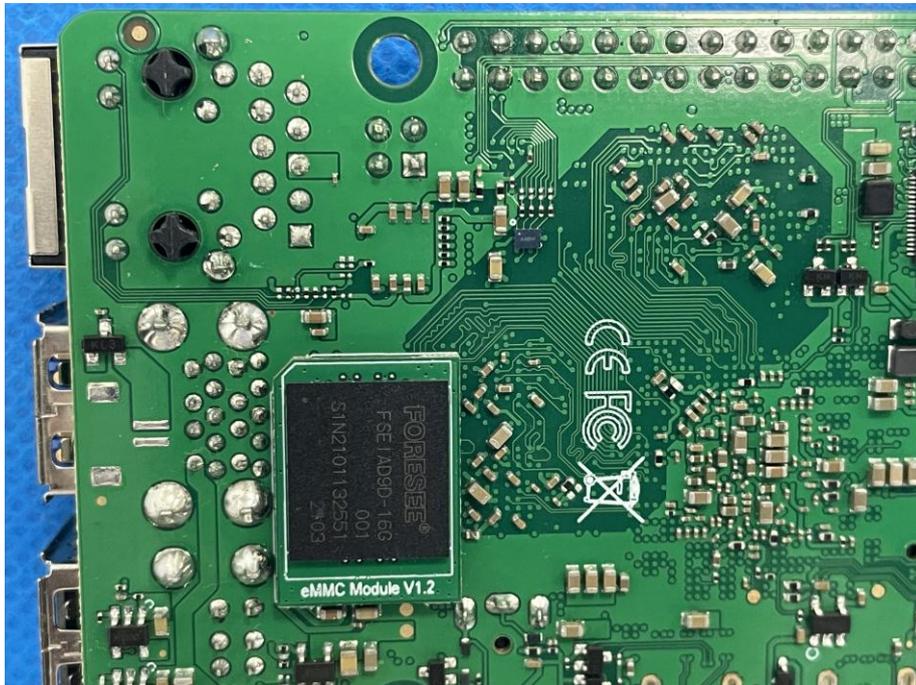
EUT Photo 9



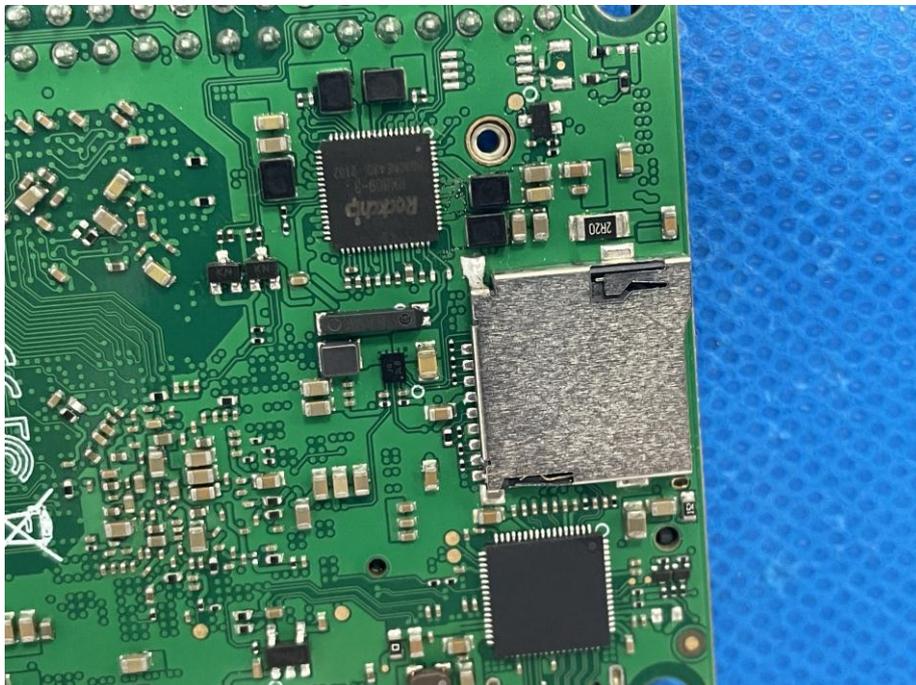
EUT Photo 10



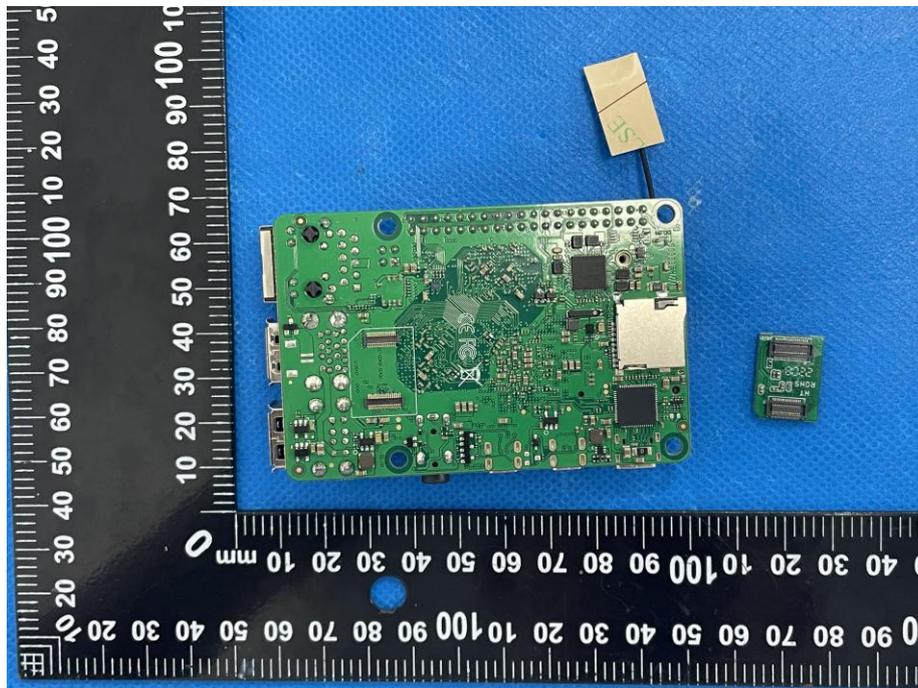
EUT Photo 11



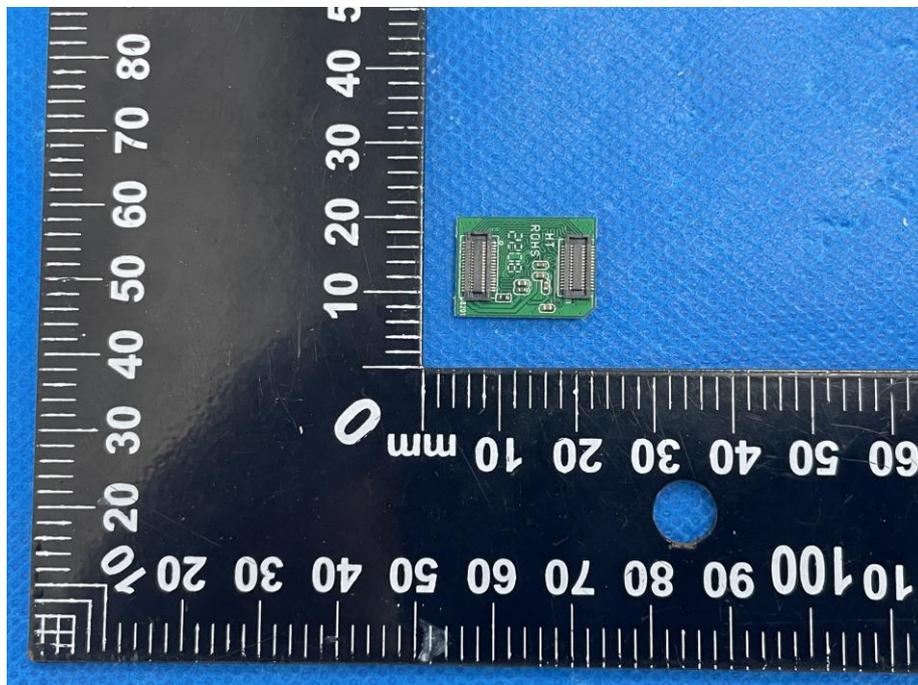
EUT Photo 12



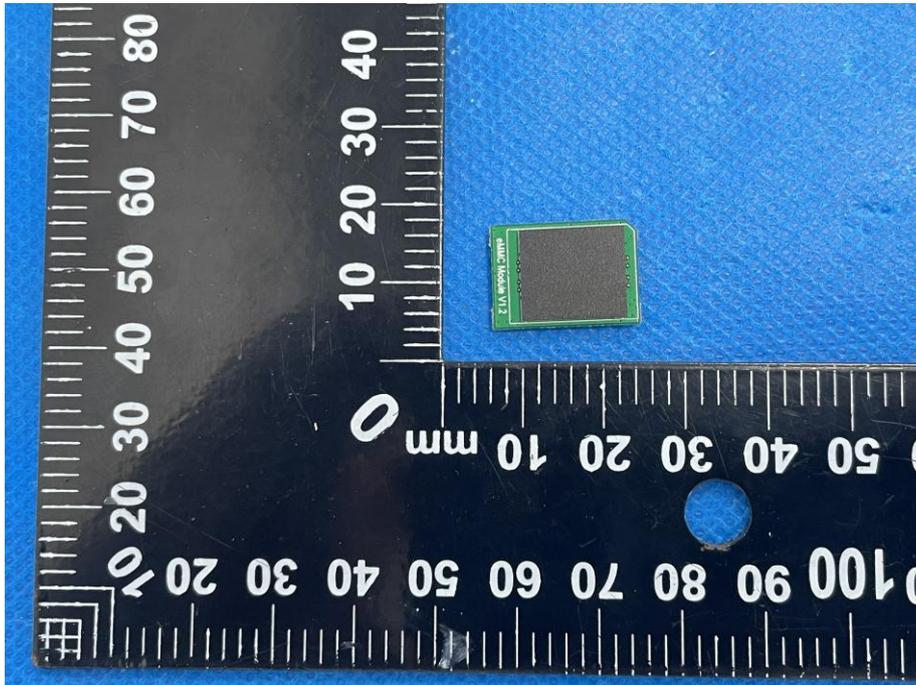
EUT Photo 13



EUT Photo 14



EUT Photo 15



EUT Photo 16



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 the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The test report without CMA mark is only used for scientific research, teaching, enterprise product development and internal quality control purposes.
8. The quality system of our laboratory is in accordance with ISO/IEC17025.
9. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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***** END *****