

TEST REPORT

Report No.: BCTC2211497861E

Applicant: ROCKPI TRADING LIMITED

Product Name: Radxa ROCK 3 Compute Module SODIMM

Model/Type
reference: RM117-D2E16W3

Tested Date: 2022-11-23 to 2022-11-25

Issued Date: 2023-02-10

Shenzhen BCTC Testing Co., Ltd.



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Product Name: Radxa ROCK 3 Compute Module SODIMM
Trademark: N/A
Model /Type Ref.: RM117-D2E16W3
RM117-D1E0W0, R117-D1E8W0, RM117-D1E0W3, RM117-D1E8W3,
RM117-D2E0W0, RM117-D2E8W0, RM117-D2E16W0, RM117-D2E32W0,
RM117-D2E0W3, RM117-D2E8W3, RM117-D2E16W3, RM117-D2E32W3
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.
Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng,
Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date: 2022-11-23
Sample tested Date: 2022-11-23 to 2022-11-25
Issue Date: 2023-02-10
Report No.: BCTC2211497861E
Test Standards: FCC Part 15B
ANSI C63.4:2014
Test Results: PASS

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.

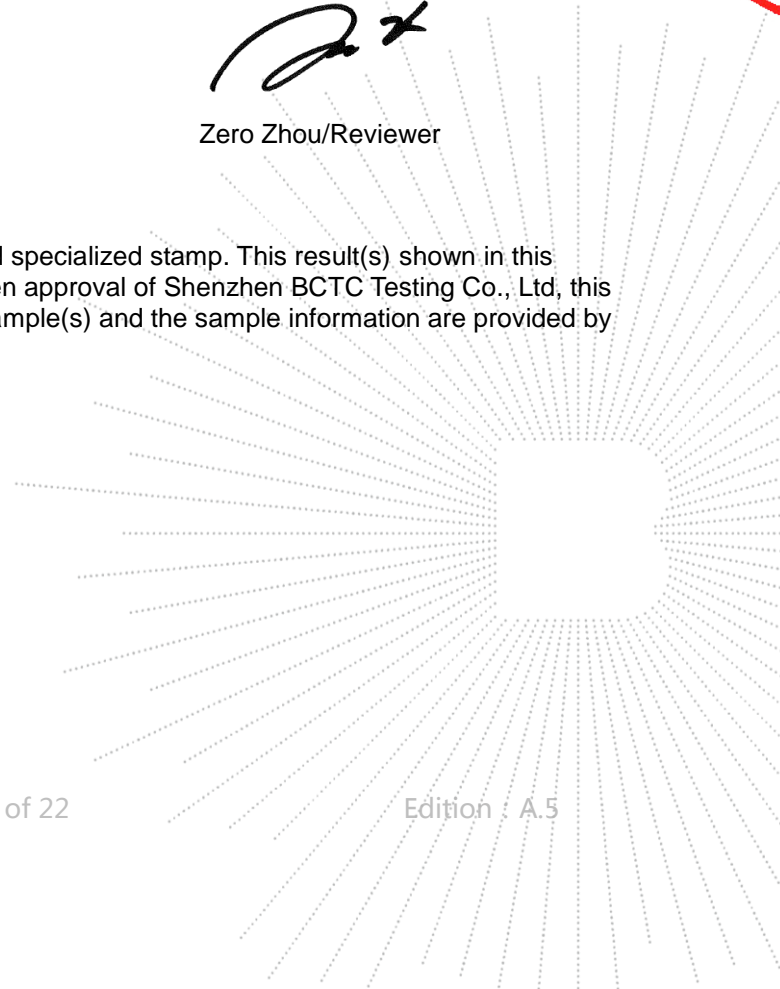
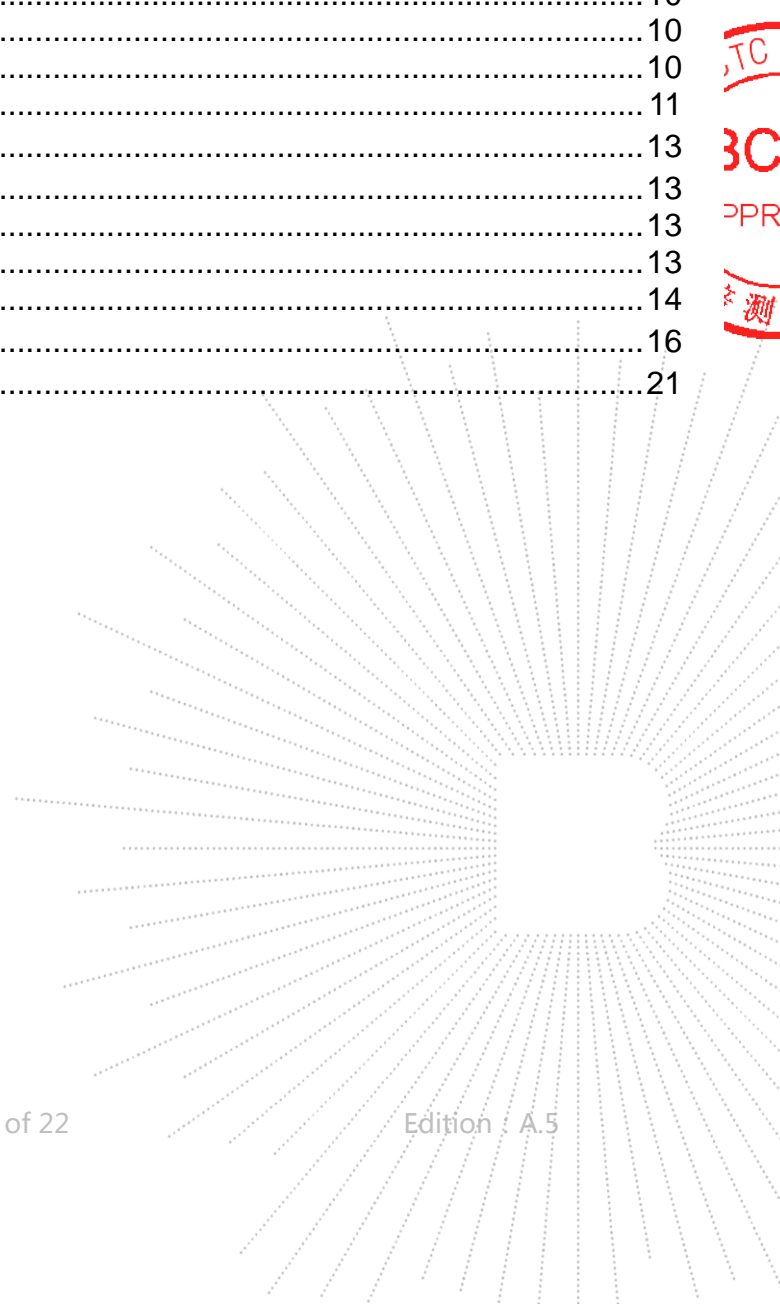


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(Note: N/A Means Not Applicable)

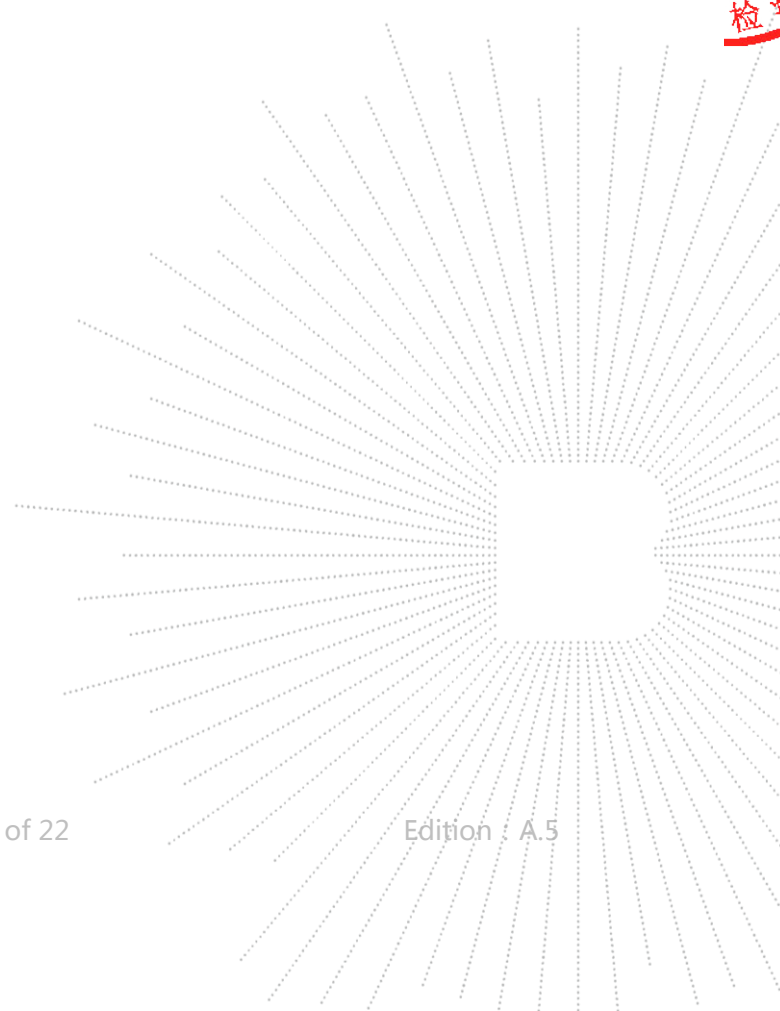


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1. Version

Report No.	Issue Date	Description	Approved
BCTC2211497861E	2023-02-10	Original	Valid

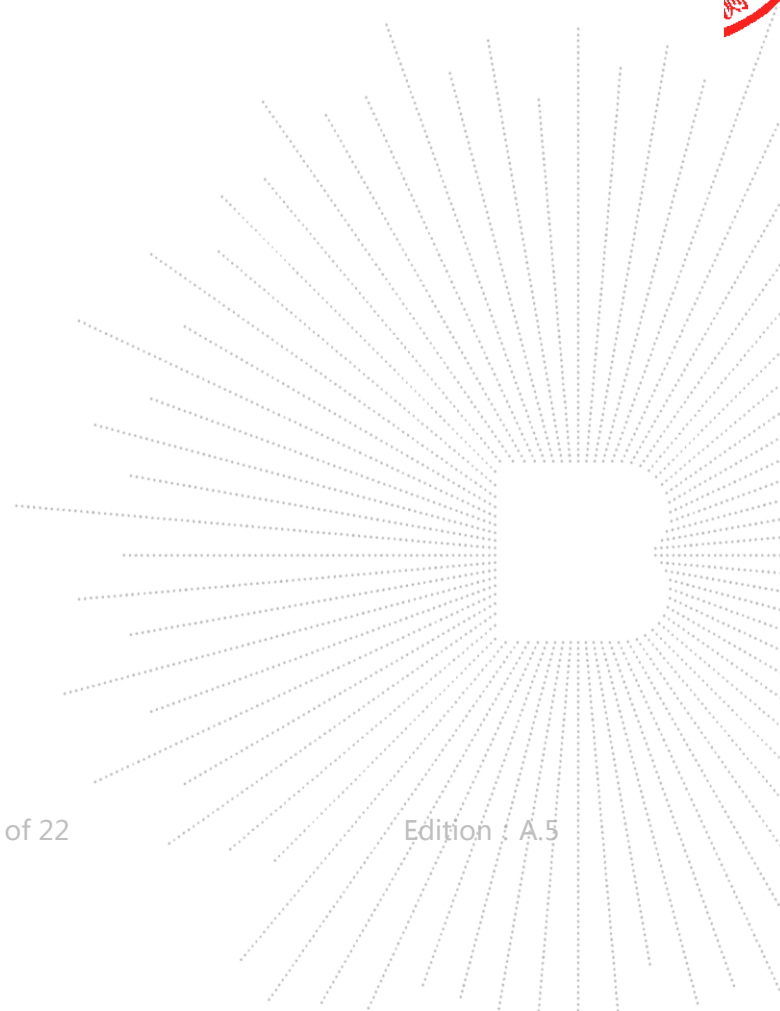
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2. Test Summary

The Product has been tested according to the following specifications:

Standard	Test Item	Test result
FCC 15.107	Conducted Emission	Pass
FCC 15.109	Radiated Emission	Pass



3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	3.20
Radiated Emission(30MHz~1GHz)	4.80
Radiated Emission(1GHz~6GHz)	4.90

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4. Product Information And Test Setup

4.1 Product Information

Ratings:

DC 12V

Model differences:

All models are identical except for the appearance color.

 less than 1.705 MHz, the measurement shall only be made up to 30 MHz.

 between 1.705 MHz and 108 MHz, the measurement shall only be made up to 1 GHz.

The highest frequency of the internal sources of the EUT is 2480MHz:
 between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz.

 between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz.

 above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40GHz, whichever is less.

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Shielded	Note
1	--	--	Applicant	---	Yes/No	With a ferrite ring in mid Detachable
2.	--	--	BCTC	---	Yes	--

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
1.	---	---	---	---	---

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

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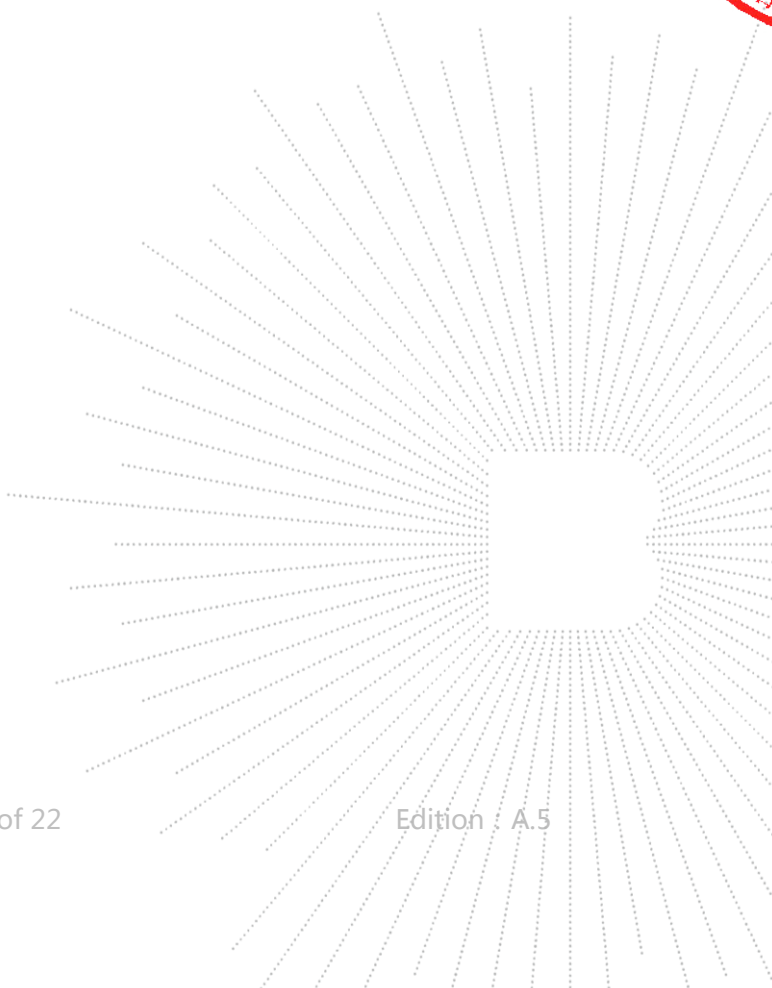
4.4 Test Mode

Test item	Test Mode	Test Voltage
Conducted Emission (150KHz-30MHz) Class B	Mode 1*	AC 120V/60Hz
	Mode 2	AC 120V/60Hz
Radiated emission(30MHz-1GHz) Class B	Mode 1	AC 120V/60Hz
	Mode 2*	AC 120V/60Hz
All test mode were tested and passed, only Conducted Emissions, Radiated Emissions shows (*) is the worst case mode which were recorded in this report.		

Remark:

Mode 1: WIFI Link+ BT Link+ HDMI+ USB 2.0 + TF + Mouse+ Keyboard+ Earphone

Mode 2: Network Port (Ping IP)+ HDMI+ USB 2.0 + TF+ Mouse+ Keyboard+ Earphone



5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

Conducted emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	May 24, 2022	May 23, 2023
LISN	R&S	ENV216	101375	May 24, 2022	May 23, 2023
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\
Attenuator	\	10dB DC-6GHz	1650	May 24, 2022	May 23, 2023
Cable	\	\	\	\	\

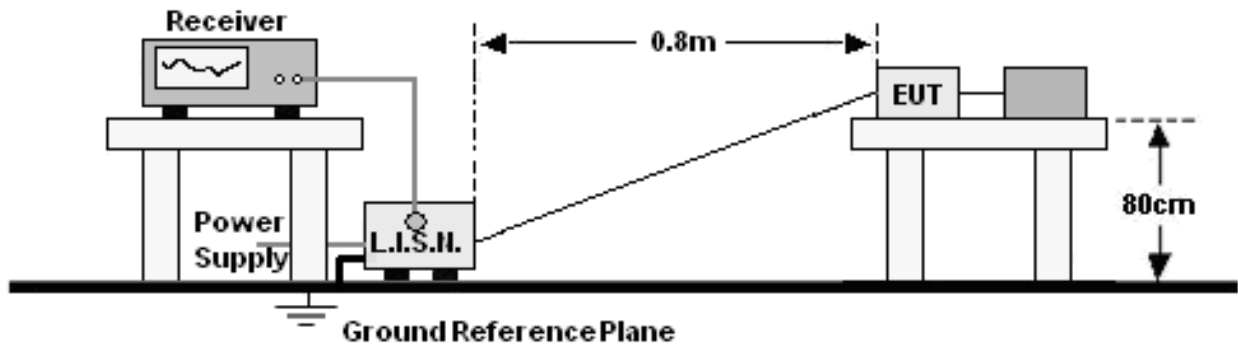
Radiated Emissions Test (966 Chamber#01)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	Jun. 06. 2020	Jun. 05, 2023
Receiver	R&S	ESRP	101154	May 24, 2022	May 23, 2023
Receiver	R&S	ESR3	102075	May 24, 2022	May 23, 2023
Amplifier	SKET	LAPA_01G18 G-45dB	\	May 24, 2022	May 23, 2023
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 24, 2022	May 23, 2023
TRILOG Broadband Antenna	schwarzbeck	VULB9163	942	May 26, 2022	May 25, 2023
Horn Antenna	schwarzbeck	BBHA9120D	1541	Jun. 06, 2022	Jun. 06, 2023
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

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6. Conducted Emission At The Mains Terminals Test

6.1 Block Diagram Of Test Setup

For mains ports:



6.2 Limit

Limits for Class B devices

(MHz)	Limits dB(μ V)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56*	56 to 46*
0,50 to 5	56	46
5 to 30	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

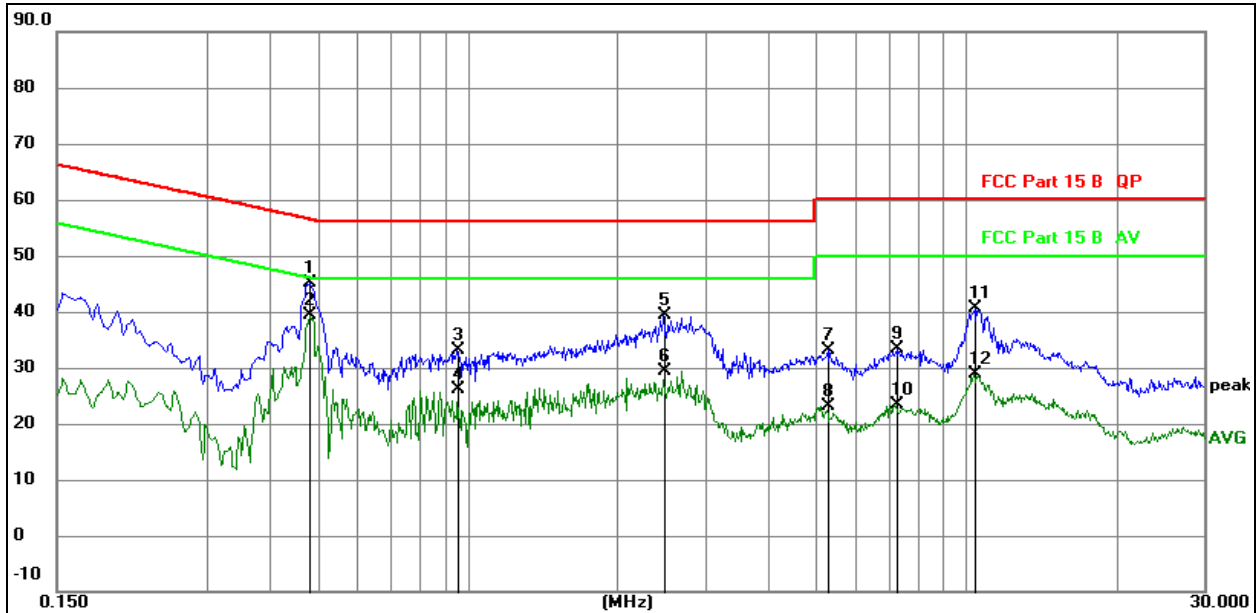
6.3 Test Procedure

For mains ports:

- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Line
Test Voltage :	AC 120V/60Hz	Test Mode:	The worst data



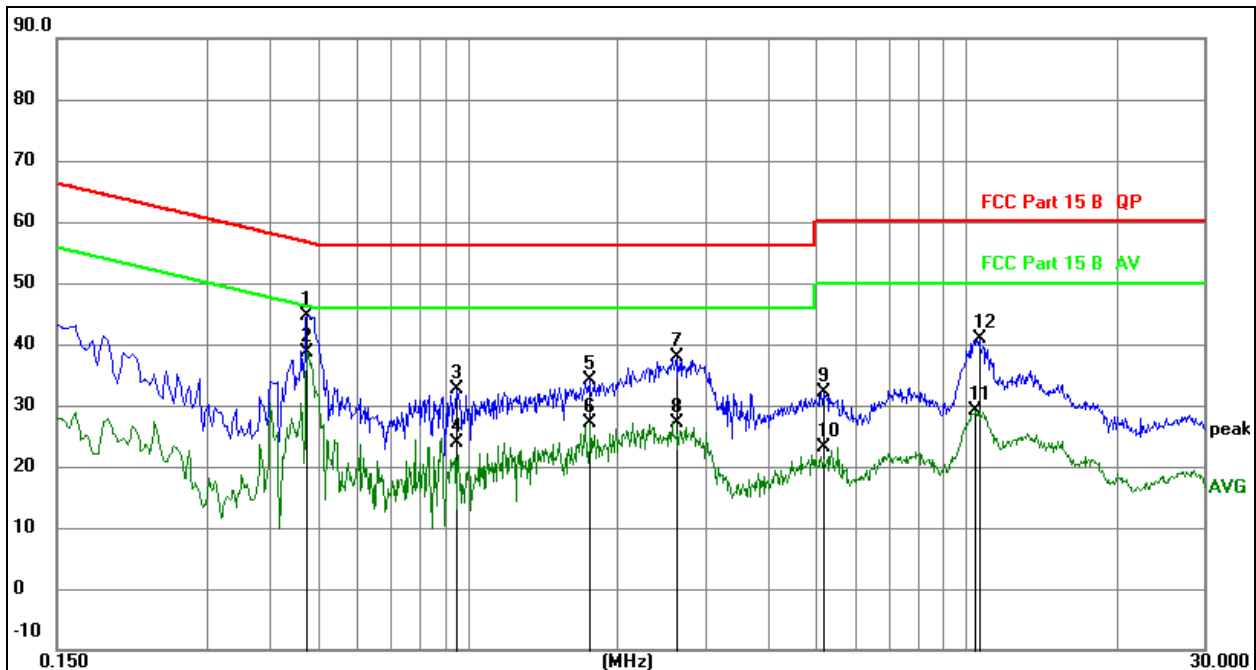
Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over= Measurement-Limit

No.	Mk.	Freq. MHz	Reading Level	Correct Factor	Measure- ment	Limit	Over	Detector
				dB	dBuV	dBuV	dB	
1		0.4830	25.39	19.72	45.11	56.29	-11.18	QP
2	*	0.4830	19.68	19.72	39.40	46.29	-6.89	AVG
3		0.9555	13.46	19.76	33.22	56.00	-22.78	QP
4		0.9555	6.26	19.76	26.02	46.00	-19.98	AVG
5		2.4765	19.39	19.93	39.32	56.00	-16.68	QP
6		2.4765	9.55	19.93	29.48	46.00	-16.52	AVG
7		5.2845	12.96	20.13	33.09	60.00	-26.91	QP
8		5.2845	2.95	20.13	23.08	50.00	-26.92	AVG
9		7.2645	13.09	20.19	33.28	60.00	-26.72	QP
10		7.2645	3.25	20.19	23.44	50.00	-26.56	AVG
11		10.4415	20.27	20.28	40.55	60.00	-19.45	QP
12		10.4415	8.64	20.28	28.92	50.00	-21.08	AVG



Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	AC 120V/60Hz	Test Mode:	The worst data


Remark:

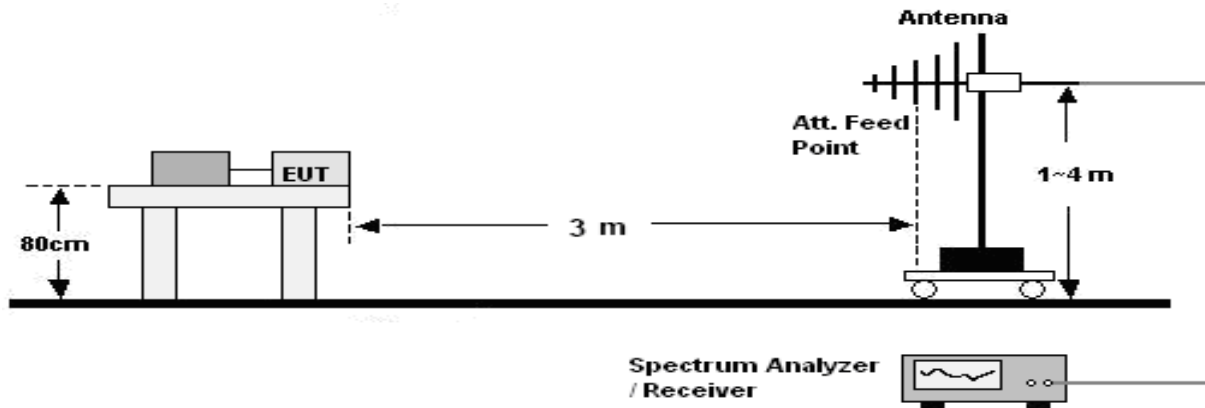
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement=Reading Level+ Correct Factor
4. Over= Measurement-Limit

No. Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	0.4761	24.88	19.73	44.61	56.41	-11.80	QP
2 *	0.4761	18.91	19.73	38.64	46.41	-7.77	AVG
3	0.9481	12.88	19.76	32.64	56.00	-23.36	QP
4	0.9481	4.10	19.76	23.86	46.00	-22.14	AVG
5	1.7529	14.21	19.85	34.06	56.00	-21.94	QP
6	1.7529	7.31	19.85	27.16	46.00	-18.84	AVG
7	2.6221	17.85	19.95	37.80	56.00	-18.20	QP
8	2.6221	7.30	19.95	27.25	46.00	-18.75	AVG
9	5.1663	11.97	20.13	32.10	60.00	-27.90	QP
10	5.1663	3.08	20.13	23.21	50.00	-26.79	AVG
11	10.4524	8.96	20.28	29.24	50.00	-20.76	AVG
12	10.6198	20.56	20.28	40.84	60.00	-19.16	QP

7. Radiation Emission Test

7.1 Block Diagram Of Test Setup

30MHz ~ 1GHz:



7.2 Limit

Limits for Class B devices

Frequency (MHz)	limits at 3m dB(μ V/m)		
	QP Detector	PK Detector	AV Detector
30-88	40.0	--	--
88-216	43.5	--	--
216-960	46.0	--	--
960 to 1000	54.0	--	--
Above 1000	--	74.0	54.0

Note: The lower limit shall apply at the transition frequencies.

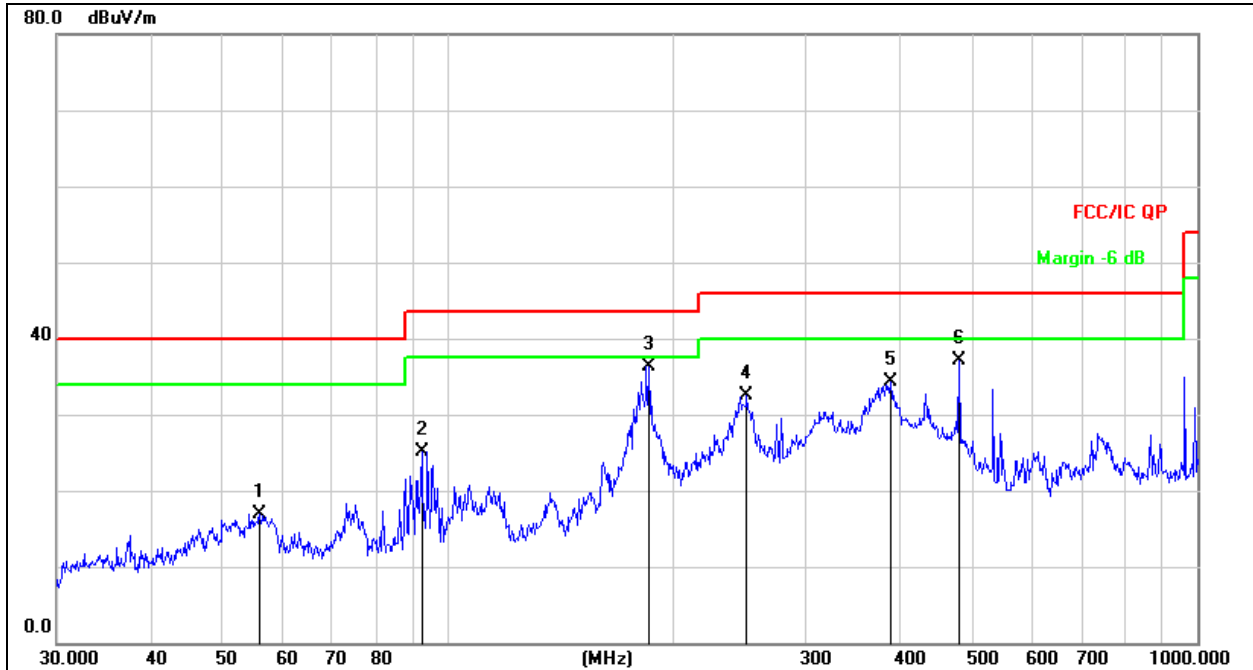
7.3 Test Procedure

30MHz ~ 1GHz:

- The Product was placed on the nonconductive turntable 0.8 m above the ground at a chamber.
- Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4 Test Result

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode:	The worst data

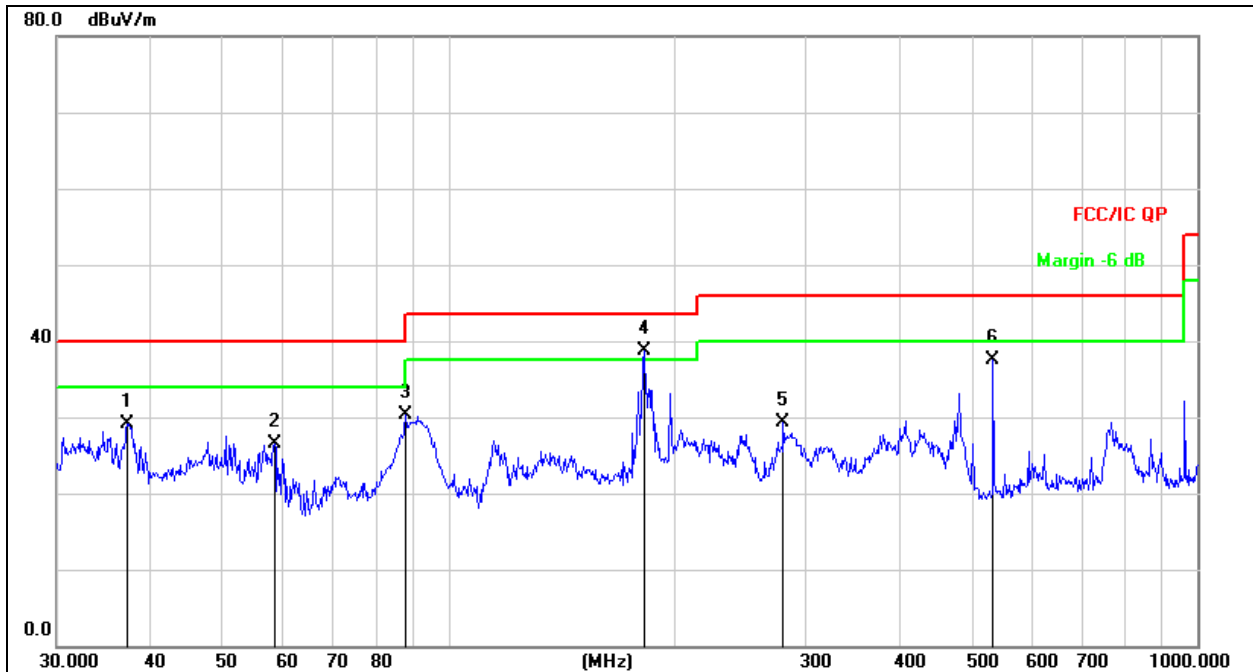


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement=Reading Level+ Correct Factor
3. Over= Measurement-Limit

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		56.0007	33.47	-16.49	16.98	40.00	-23.02	QP
2		92.1388	44.08	-18.92	25.16	43.50	-18.34	QP
3	*	185.1379	54.83	-18.46	36.37	43.50	-7.13	QP
4		250.3012	48.41	-15.82	32.59	46.00	-13.41	QP
5		389.3549	46.67	-12.33	34.34	46.00	-11.66	QP
6		480.5276	47.90	-10.73	37.17	46.00	-8.83	QP

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Voltage :	AC 120V/60Hz	Test Mode:	The worst data

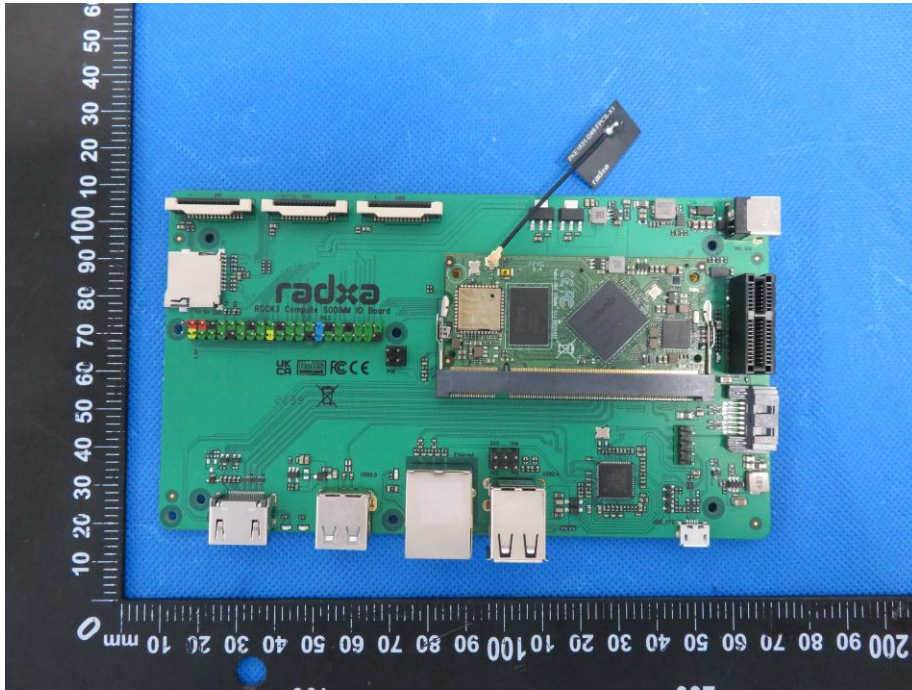

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Measurement=Reading Level+ Correct Factor
3. Over= Measurement-Limit

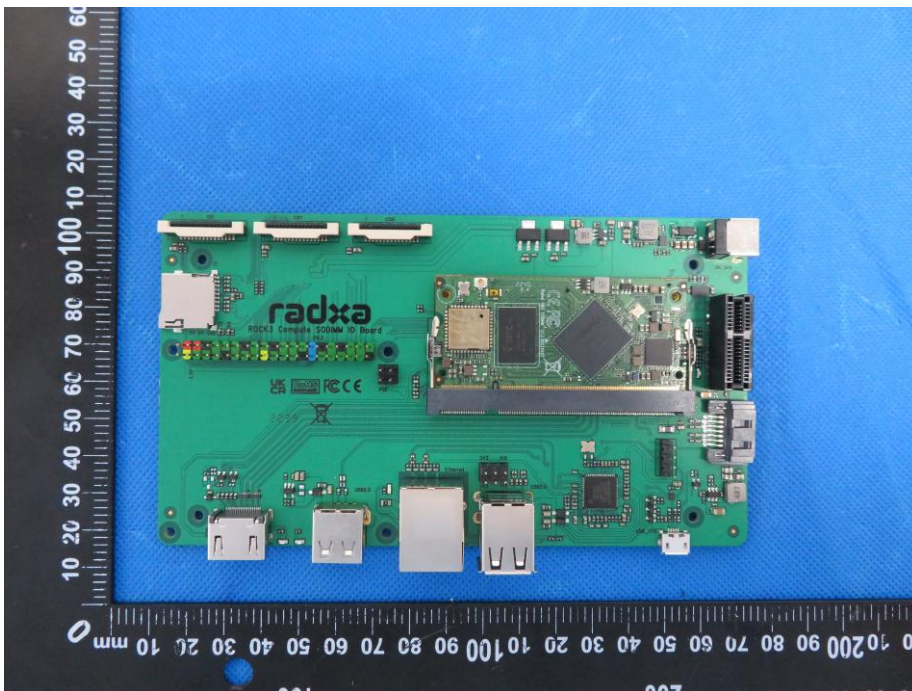
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dB/m	dB	
1		37.2855	46.30	-17.17	29.13	40.00	-10.87	QP
2		58.6126	43.47	-16.88	26.59	40.00	-13.41	QP
3		87.7248	50.05	-19.76	30.29	40.00	-9.71	QP
4	*	182.5592	57.27	-18.65	38.62	43.50	-4.88	QP
5		280.0237	44.40	-15.08	29.32	46.00	-16.68	QP
6		533.8321	47.19	-9.76	37.43	46.00	-8.57	QP

8. EUT Photographs

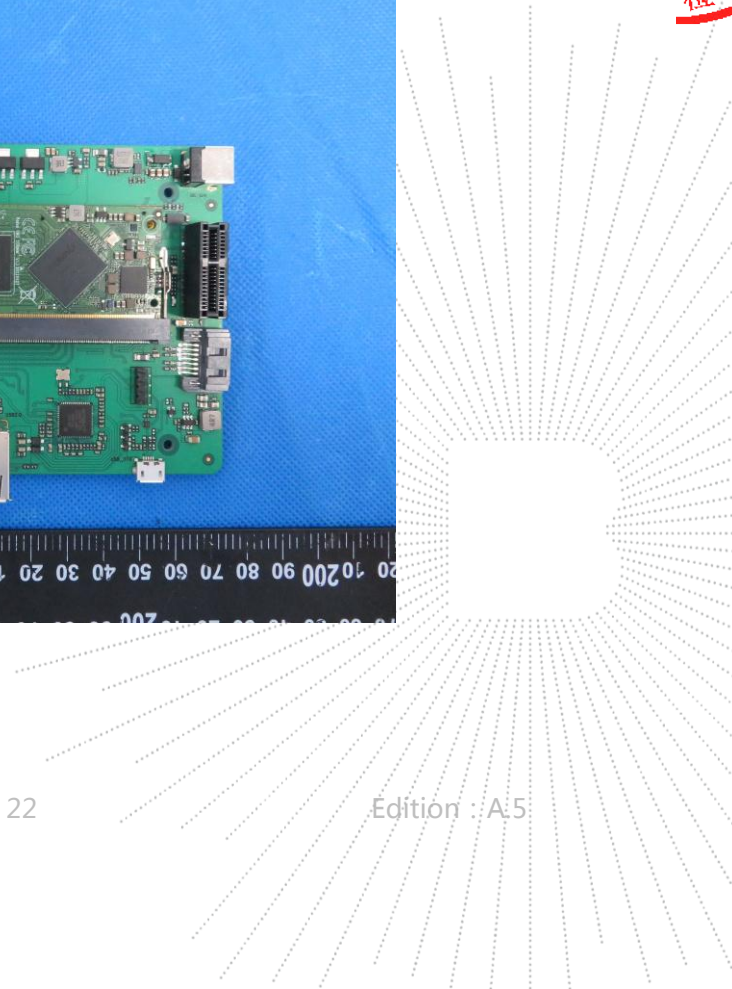
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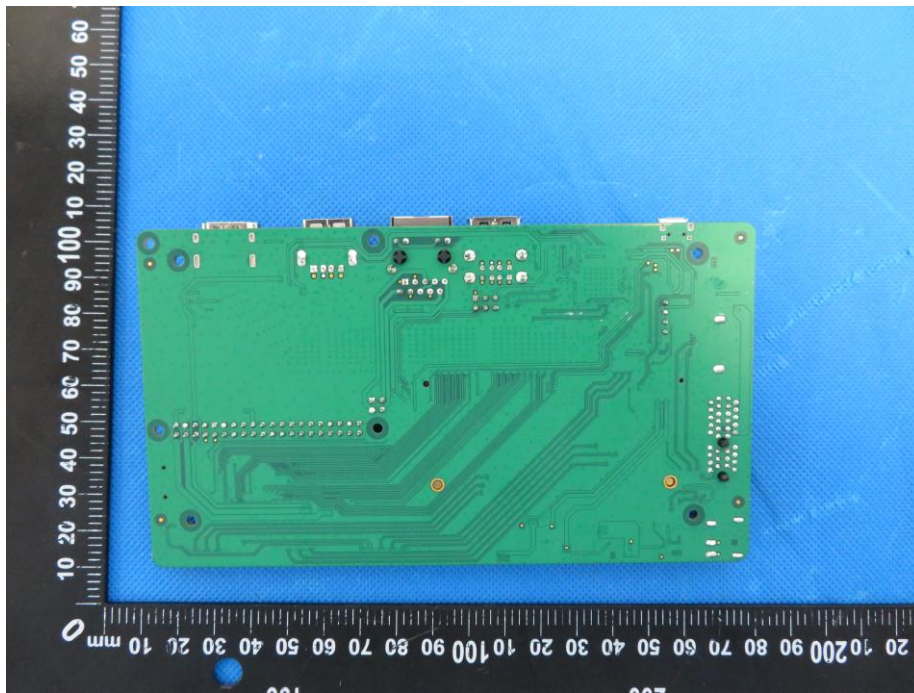
EUT Photo 2



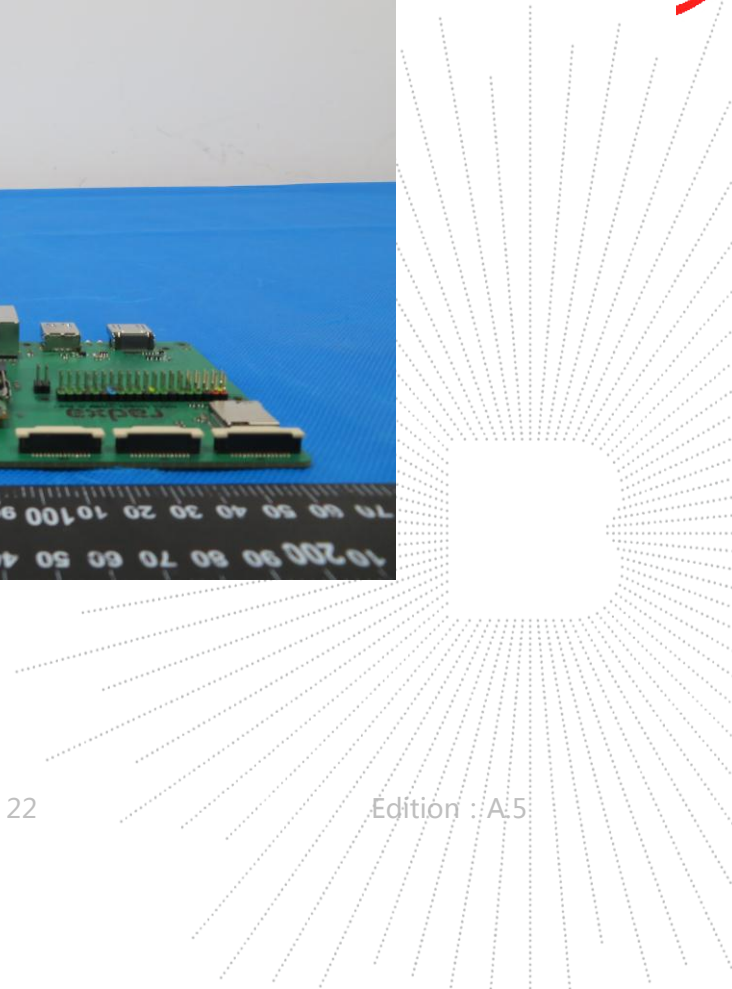
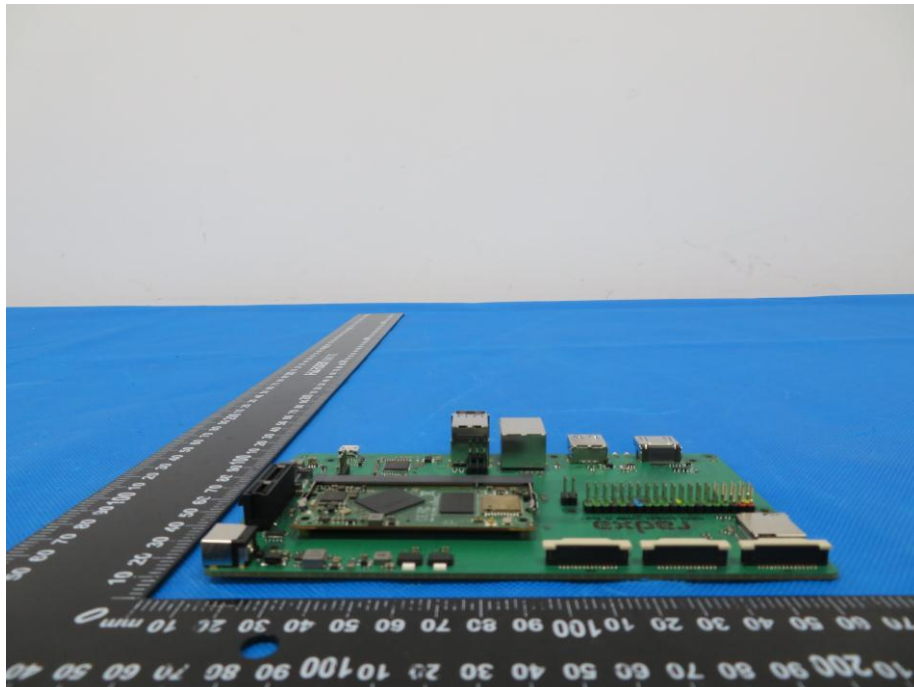
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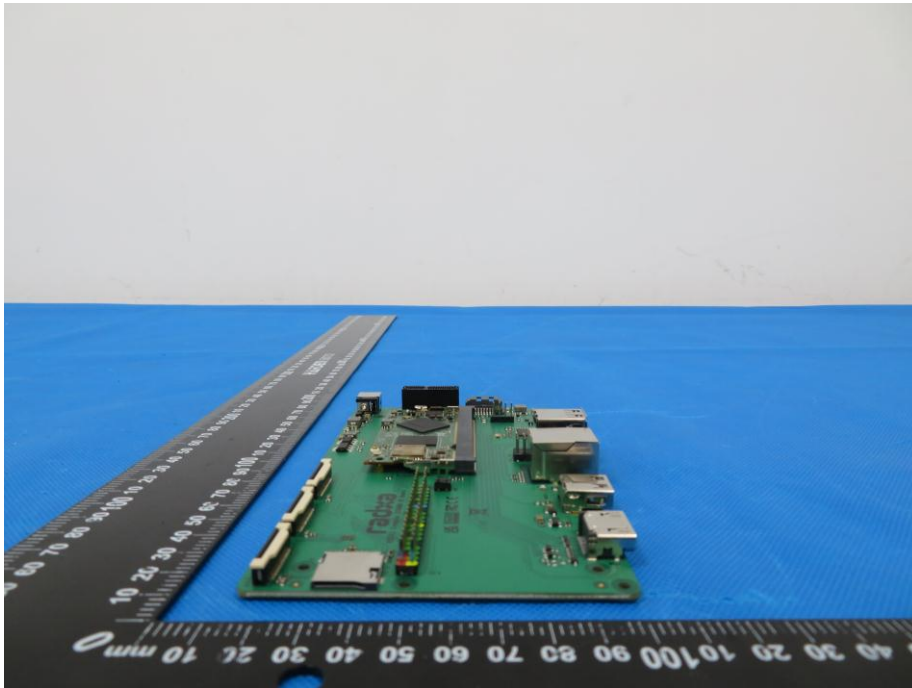
EUT Photo 3



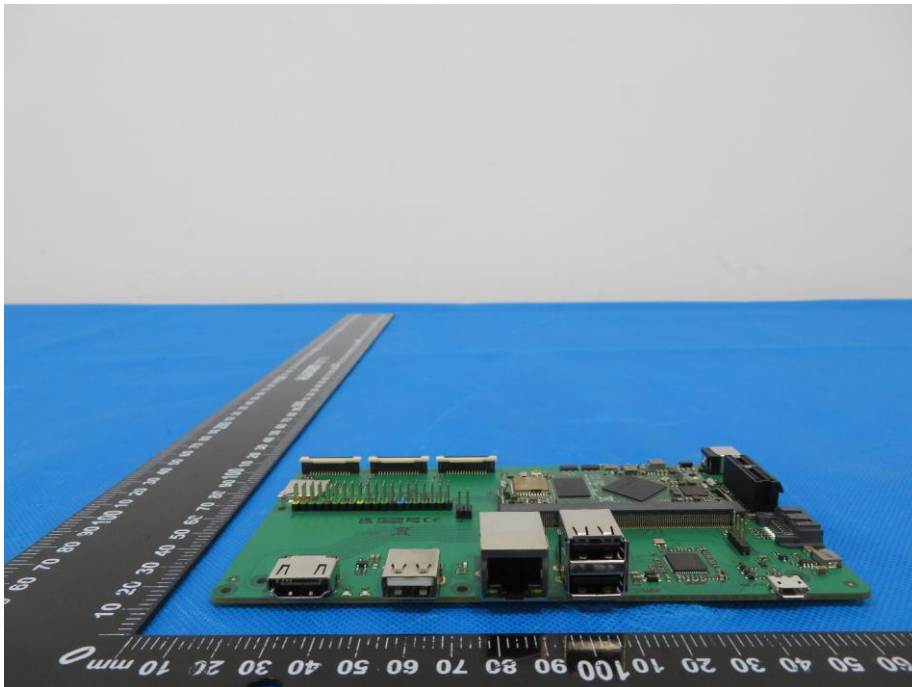
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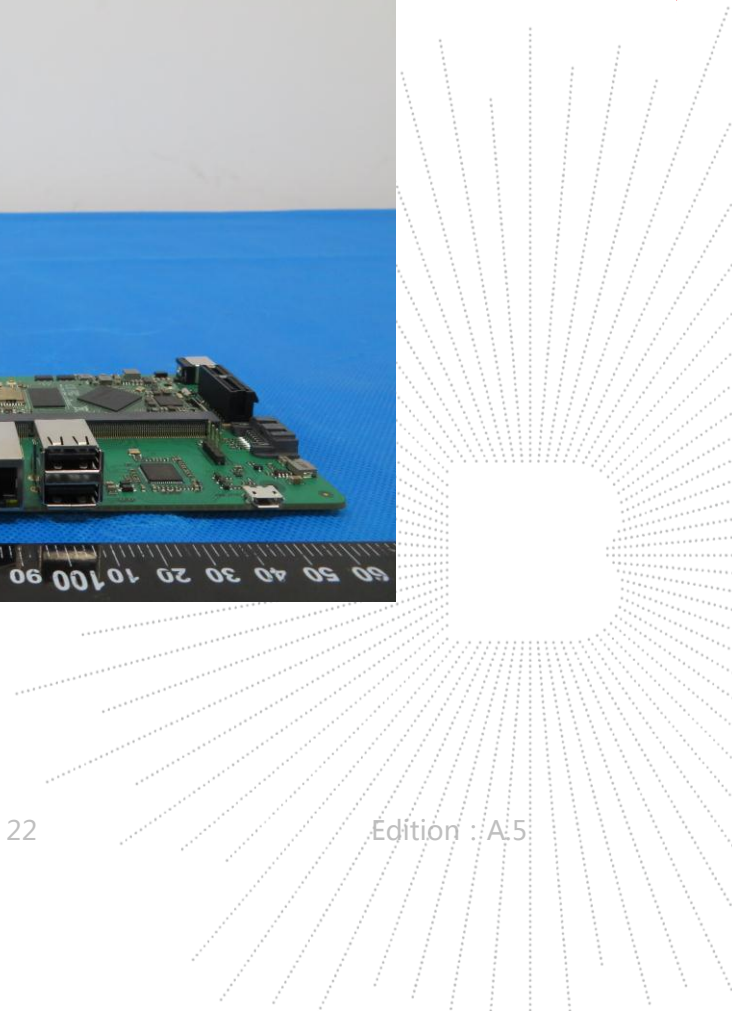
EUT Photo 5



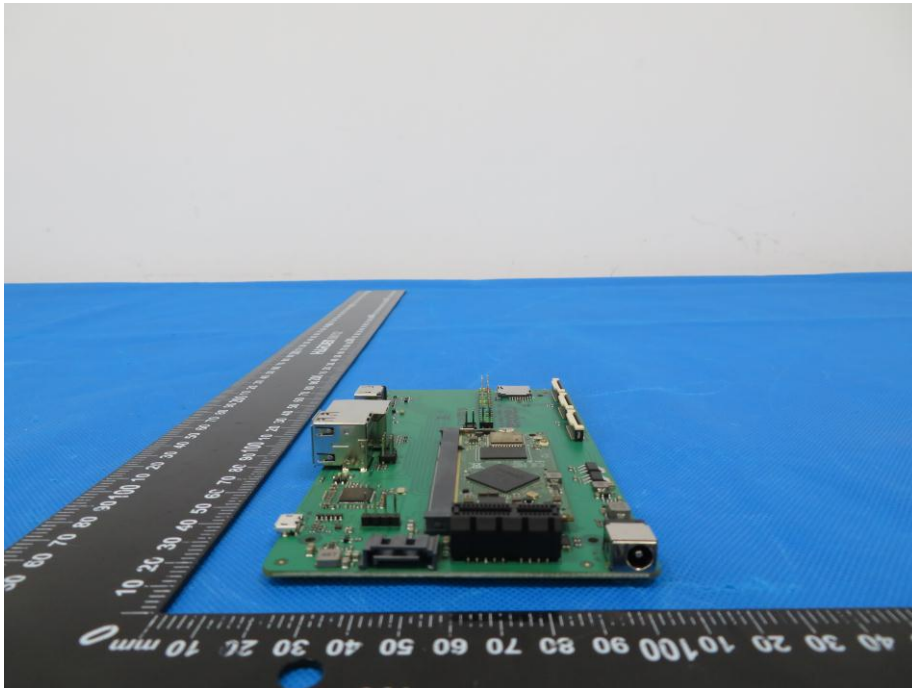
EUT Photo 6



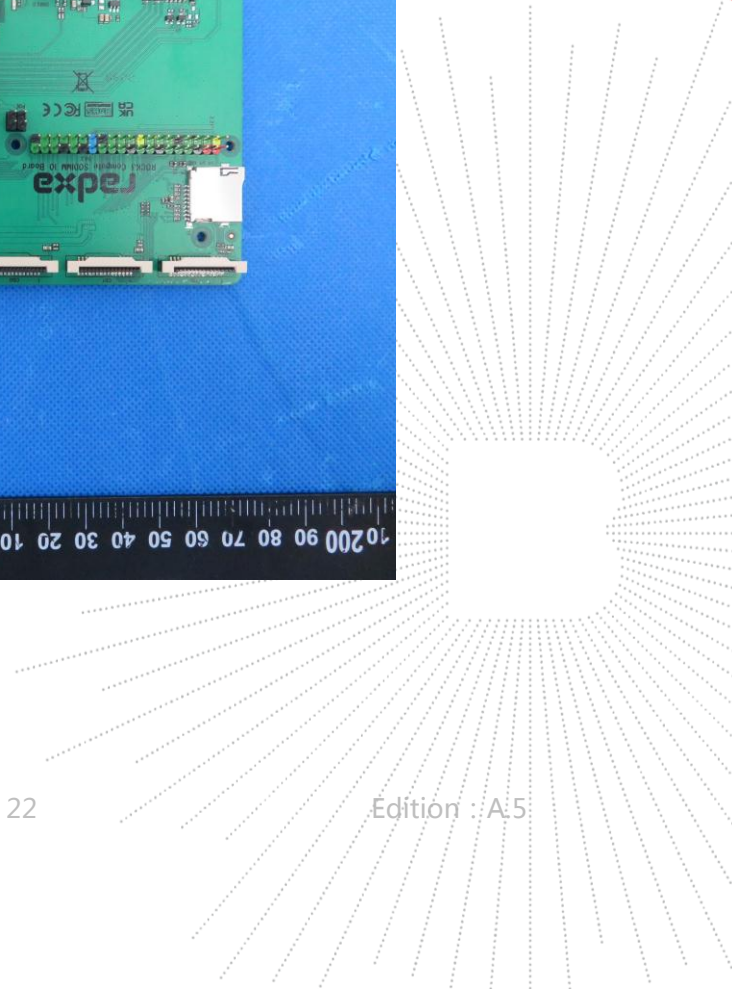
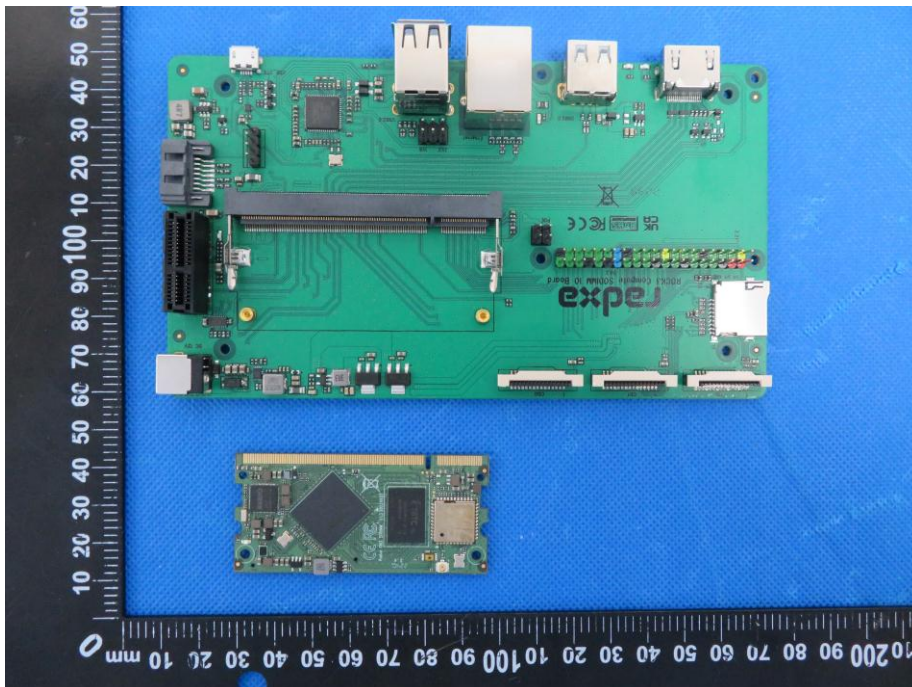
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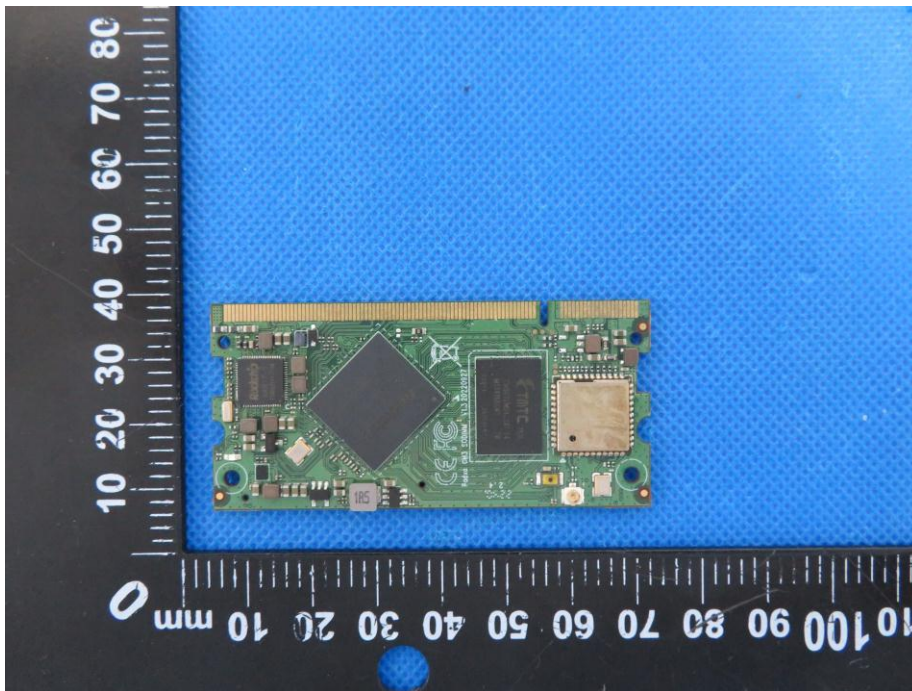
EUT Photo 7



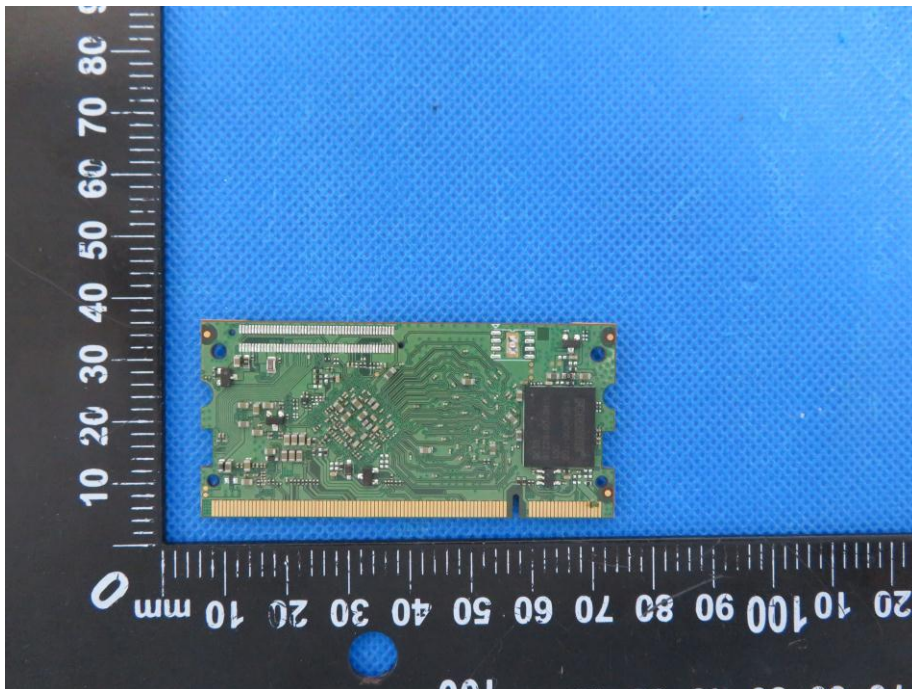
EUT Photo 8



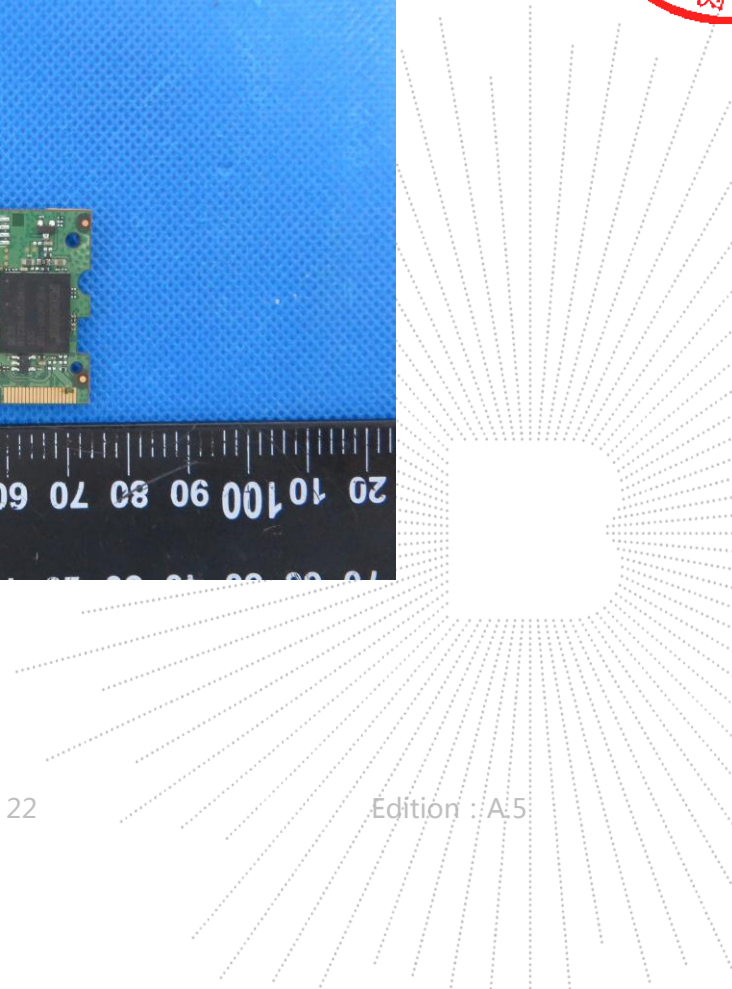
EUT Photo 9



EUT Photo 10



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9. EUT Test Setup Photographs

Conducted emissions



Radiated emissions



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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.

Address:

1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

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FAX : 0755-33229357

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E-Mail : bctc@bctc-lab.com.cn

***** END *****

