

TEST REPORT

Report No.: BCTC2410939267E

Applicant: Radxa Computer (Shenzhen) Co., Ltd.

Product Name: Radxa E20C

Test Model: Radxa E20C D1E8O1

Tested Date: 2024-10-14 to 2024-10-24

Issued Date: 2024-10-29

Shenzhen BCTC Testing Co., Ltd.



Product Name: Radxa E20C

Trademark: **radxa**[®]
Radxa E20C D1E8O1

Model/Type Reference: Radxa E20C D1E0O1, Radxa E20C D1E0O2, Radxa E20C D1E8O2,
Radxa E20C D2E0O1, Radxa E20C D2E0O2, Radxa E20C D2E16O1,
Radxa E20C D2E16O2, Radxa E20C D4E0O1, Radxa E20C D4E0O2,
Radxa E20C D4E32O1, Radxa E20C D4E32O2

Prepared For: Radxa Computer (Shenzhen) Co., Ltd.

Address: 1602, Smart Valley, tiezai Road, Gongle community, Xixiang, Baoan, Shenzhen

Manufacturer: Radxa Computer (Shenzhen) Co., Ltd.

Address: 1602, Smart Valley, tiezai Road, Gongle community, Xixiang, Baoan, Shenzhen

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: 2024-10-14

Sample Tested Date: 2024-10-14 to 2024-10-24

Issue Date: 2024-10-29

Report No.: BCTC2410939267E

Test Standards: FCC PART 15B
ANSI C63.4:2014

Test Results: PASS

Tested by:



Icey 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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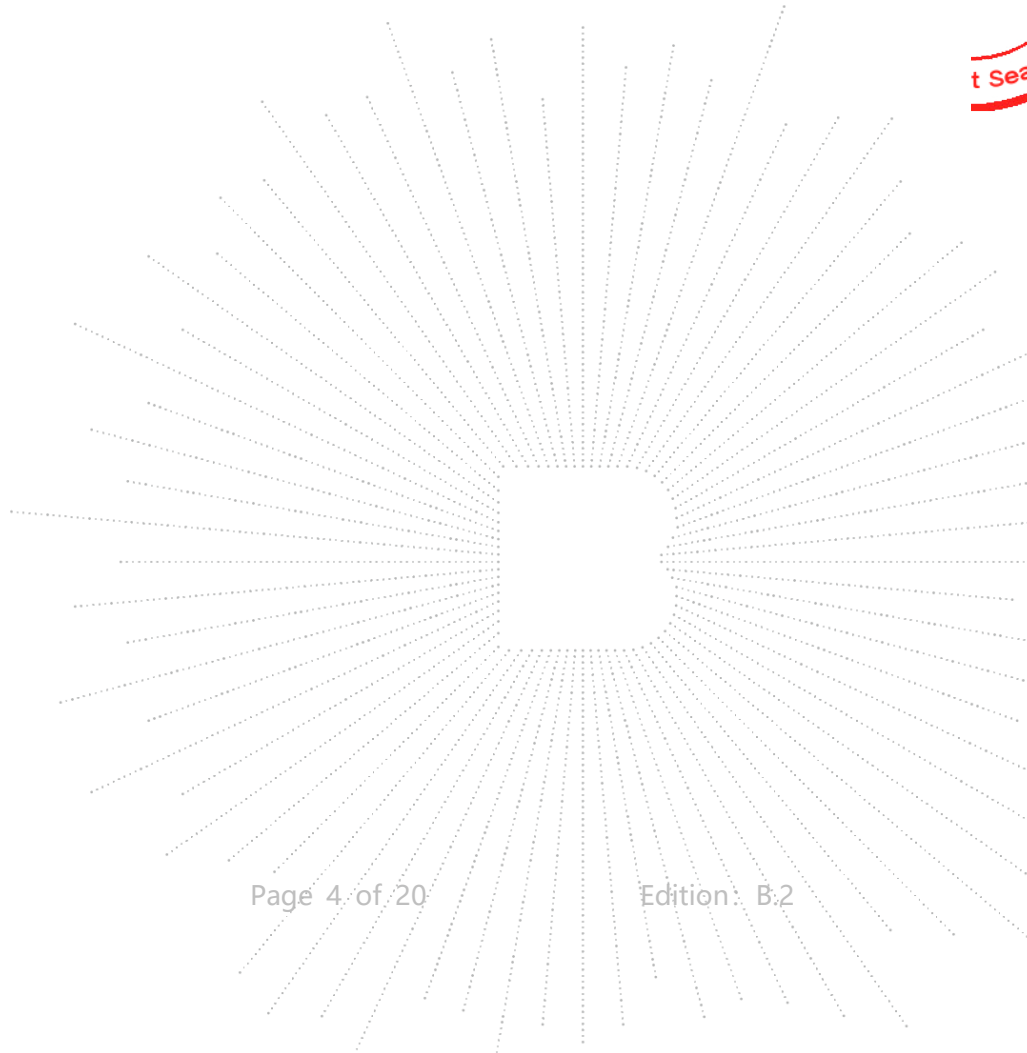
(Note: N/A Means Not Applicable)

BCTC
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 Report

1. Version

| Report No. | Issue Date | Description | Approved |
|-----------------|------------|-------------|----------|
| BCTC2410939267E | 2024-10-29 | Original | Valid |
| | | | |

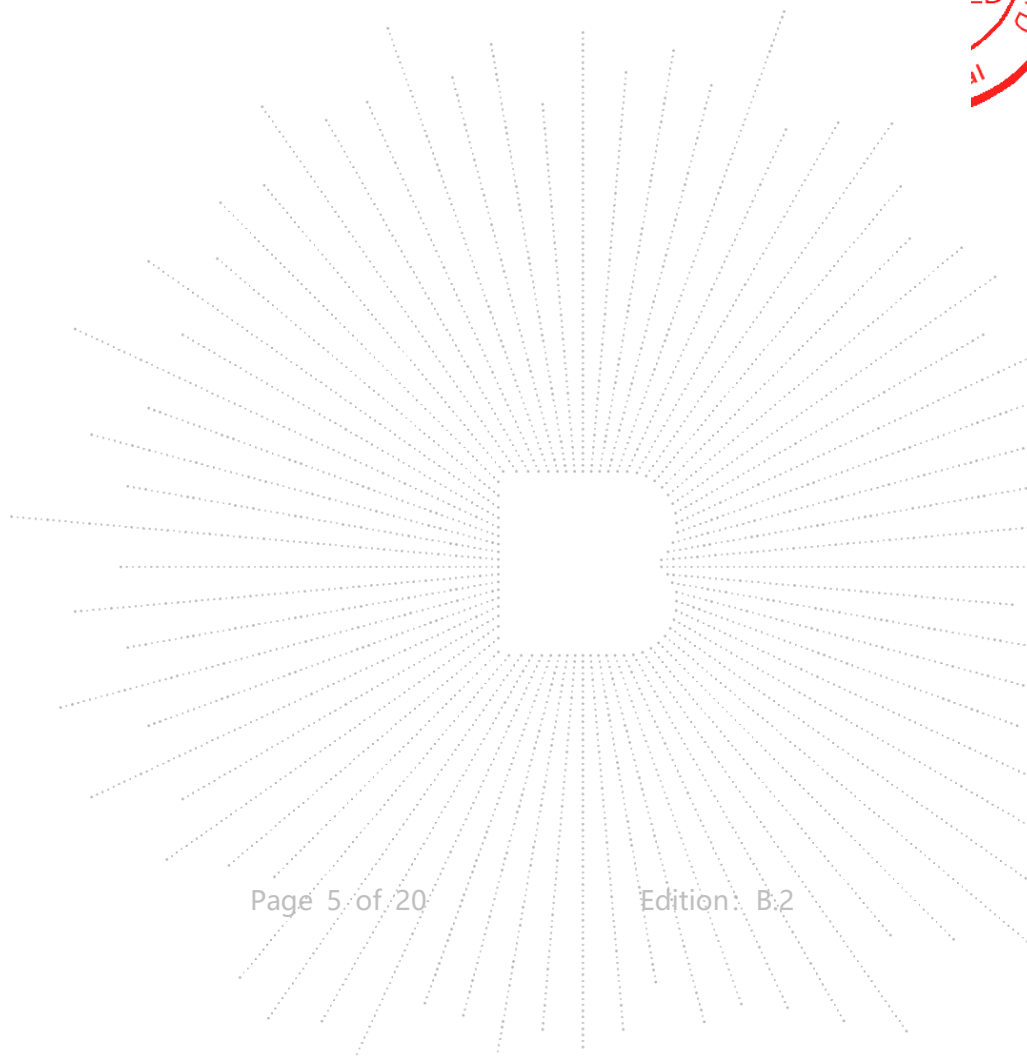
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2. Test Summary

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) | 3.10 |
| Radiated disturbance (30MHz-200MHz) | 4.60 |
| Radiated disturbance (200MHz-1000MHz) | 5.20 |

CO., LTD.

4. Product Information And Test Setup

4.1 Product Information

Ratings: Input: DC5V 3A
Model difference: All models are identical except for the appearance color and model named.

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. | PC | Lenovo | ThinkPad E15 Gen 2 | --- | --- |
| 2. | Router | Mi | R4A | --- | --- |
| 3. | Adapter | Invisible | NVZ469PH | --- | --- |

Notes:

- All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

| Test item | Test Mode | Test Voltage |
|---|-----------|---------------------------------------|
| Conducted Emission (150KHz-30MHz) Class B | Working | DC 5V from adapter Input AC 120V/60Hz |
| Radiated emission(30MHz-1GHz) Class B | Working | DC 5V from adapter Input AC 120V/60Hz |



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

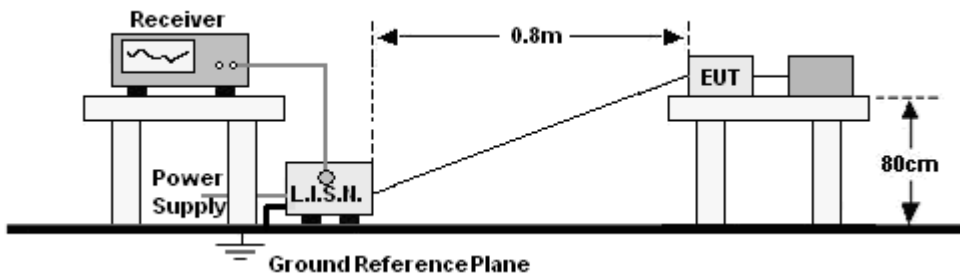
| Conducted Emissions Test | | | | | |
|--------------------------|--------------|-------------|----------------|--------------|--------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Receiver | R&S | ESR3 | 102075 | May 16, 2024 | May 15, 2025 |
| LISN | R&S | ENV216 | 101375 | May 16, 2024 | May 15, 2025 |
| Software | Frad | EZ-EMC | EMC-CON 3A1 | \ | \ |
| Pulse limiter | Schwarzbeck | VTSD 9561-F | 01323 | May 16, 2024 | May 15, 2025 |

| Radiated Emissions Test (966 Chamber#01) | | | | | |
|--|--------------|----------------------|------------------|--------------|--------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| 966 chamber | ChengYu | 966 Room | 966 | May 15, 2023 | May 14, 2026 |
| Receiver | R&S | ESRP | 101154 | May 16, 2024 | May 15, 2025 |
| Receiver | R&S | ESR3 | 102075 | May 16, 2024 | May 15, 2025 |
| Amplifier | SKET | LAPA_01G1 8G-45dB | SK202104090 1 | May 16, 2024 | May 15, 2025 |
| Amplifier | Schwarzbeck | BBV9744 | 9744-0037 | May 16, 2024 | May 15, 2025 |
| TRILOG Broadband Antenna | schwarzbeck | VULB9163 | 942 | May 21, 2024 | May 20, 2025 |
| Horn Antenna | schwarzbeck | BBHA9120D | 1541 | May 21, 2024 | May 20, 2025 |
| Software | Frad | EZ-EMC | FA-03A2 RE | \ | \ |

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

| Frequency range (MHz) | Limits dB(μV) | |
|-----------------------|---------------|-----------|
| | 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.

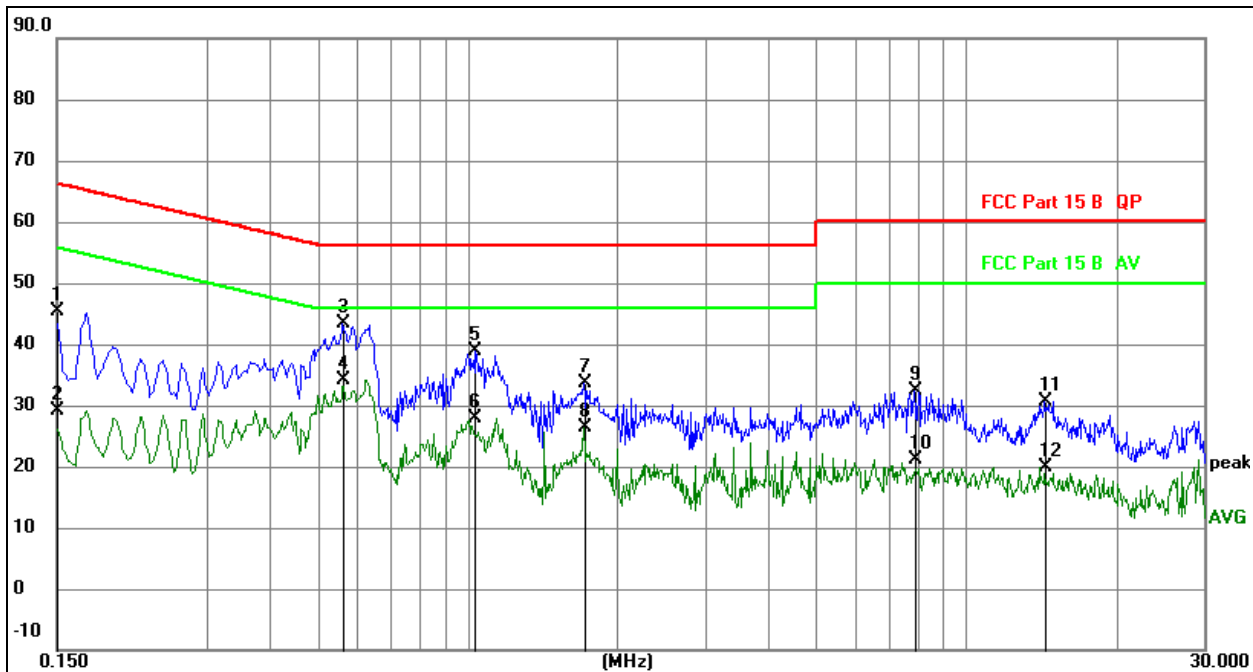
6.3 Test procedure

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

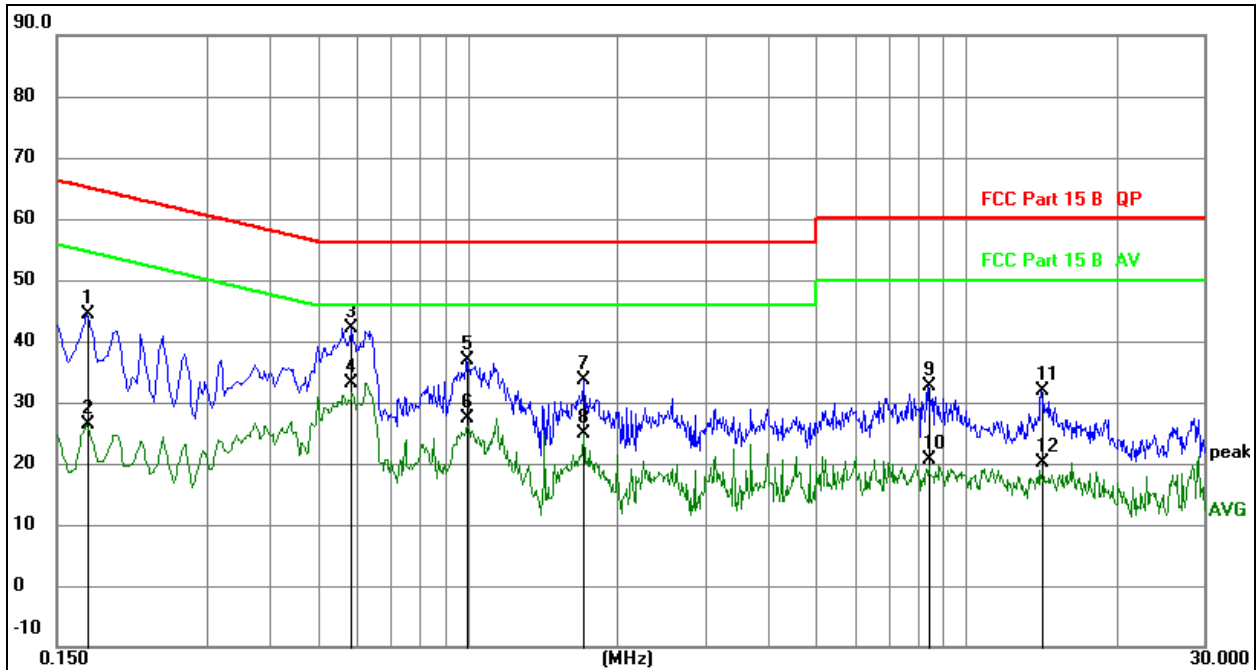
| | | | |
|----------------|--|--------------------|---------|
| Temperature: | 26 °C | Relative Humidity: | 54%RH |
| Pressure: | 101kPa | Phase : | Line |
| Test Voltage : | DC 5V from adapter Input AC 120V/60Hz | Test Mode: | Working |


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 | | 0.1500 | 25.23 | 20.07 | 45.30 | 66.00 | -20.70 | QP |
| 2 | | 0.1500 | 9.11 | 20.07 | 29.18 | 56.00 | -26.82 | AVG |
| 3 | | 0.5639 | 23.22 | 20.08 | 43.30 | 56.00 | -12.70 | QP |
| 4 | * | 0.5639 | 13.98 | 20.08 | 34.06 | 46.00 | -11.94 | AVG |
| 5 | | 1.0320 | 18.84 | 20.09 | 38.93 | 56.00 | -17.07 | QP |
| 6 | | 1.0320 | 7.73 | 20.09 | 27.82 | 46.00 | -18.18 | AVG |
| 7 | | 1.7160 | 13.45 | 20.10 | 33.55 | 56.00 | -22.45 | QP |
| 8 | | 1.7160 | 6.40 | 20.10 | 26.50 | 46.00 | -19.50 | AVG |
| 9 | | 7.8540 | 12.14 | 20.16 | 32.30 | 60.00 | -27.70 | QP |
| 10 | | 7.8540 | 1.06 | 20.16 | 21.22 | 50.00 | -28.78 | AVG |
| 11 | | 14.4015 | 10.29 | 20.29 | 30.58 | 60.00 | -29.42 | QP |
| 12 | | 14.4015 | -0.52 | 20.29 | 19.77 | 50.00 | -30.23 | AVG |

| | | | |
|----------------|--|--------------------|---------|
| Temperature: | 26 °C | Relative Humidity: | 54%RH |
| Pressure: | 101kPa | Phase : | Neutral |
| Test Voltage : | DC 5V from adapter Input AC 120V/60Hz | Test Mode: | Working |


Remark:

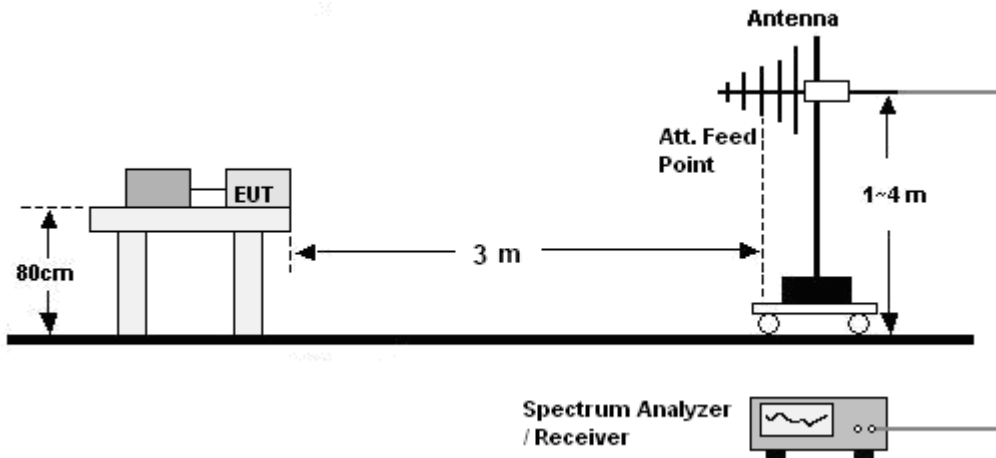
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor.
4. Over = Measurement – Limit.

| No. | Mk. | Freq. MHz | Reading Level | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Over dB | Detector |
|-----|-----|--------------|------------------|-------------------------|--------------------------|---------------|------------|----------|
| 1 | | 0.1722 | 24.40 | 20.07 | 44.47 | 64.85 | -20.38 | QP |
| 2 | | 0.1722 | 6.21 | 20.07 | 26.28 | 54.85 | -28.57 | AVG |
| 3 | | 0.5854 | 22.12 | 20.08 | 42.20 | 56.00 | -13.80 | QP |
| 4 | * | 0.5854 | 13.05 | 20.08 | 33.13 | 46.00 | -12.87 | AVG |
| 5 | | 0.9944 | 16.73 | 20.09 | 36.82 | 56.00 | -19.18 | QP |
| 6 | | 0.9944 | 7.18 | 20.09 | 27.27 | 46.00 | -18.73 | AVG |
| 7 | | 1.7071 | 13.48 | 20.10 | 33.58 | 56.00 | -22.42 | QP |
| 8 | | 1.7071 | 4.75 | 20.10 | 24.85 | 46.00 | -21.15 | AVG |
| 9 | | 8.3671 | 12.56 | 20.16 | 32.72 | 60.00 | -27.28 | QP |
| 10 | | 8.3671 | 0.47 | 20.16 | 20.63 | 50.00 | -29.37 | AVG |
| 11 | | 14.1376 | 11.61 | 20.29 | 31.90 | 60.00 | -28.10 | QP |
| 12 | | 14.1376 | -0.07 | 20.29 | 20.22 | 50.00 | -29.78 | AVG |

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.

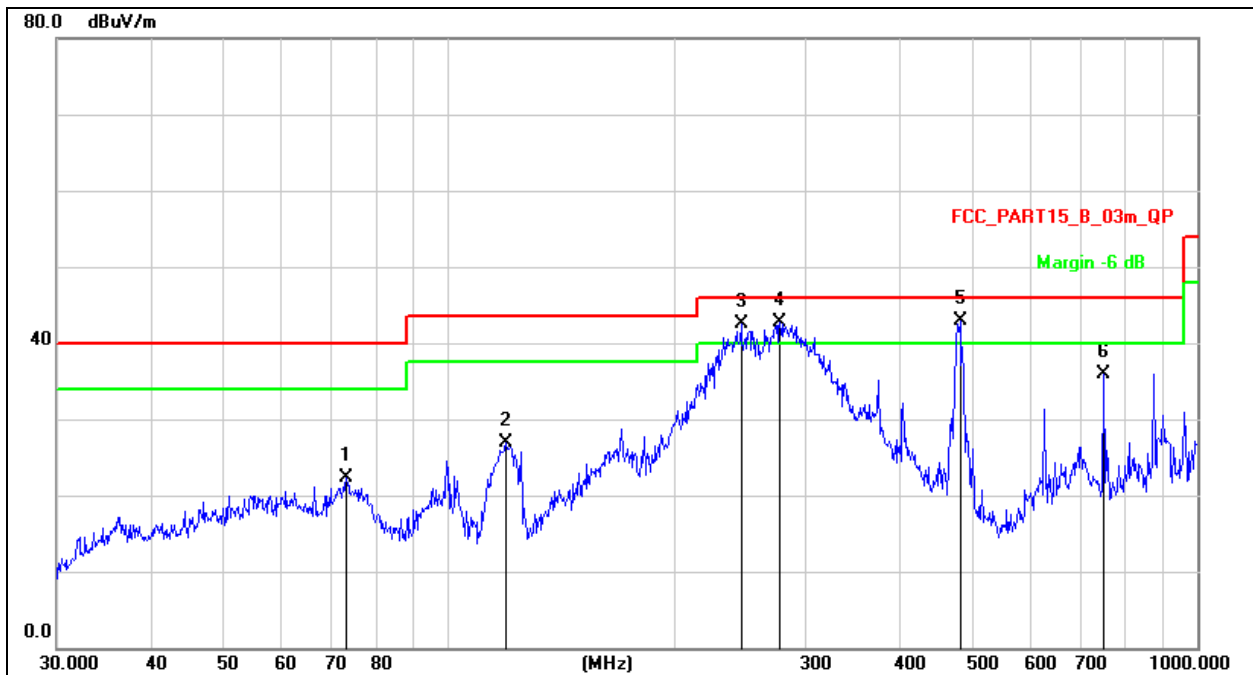
7.3 Test Procedure

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

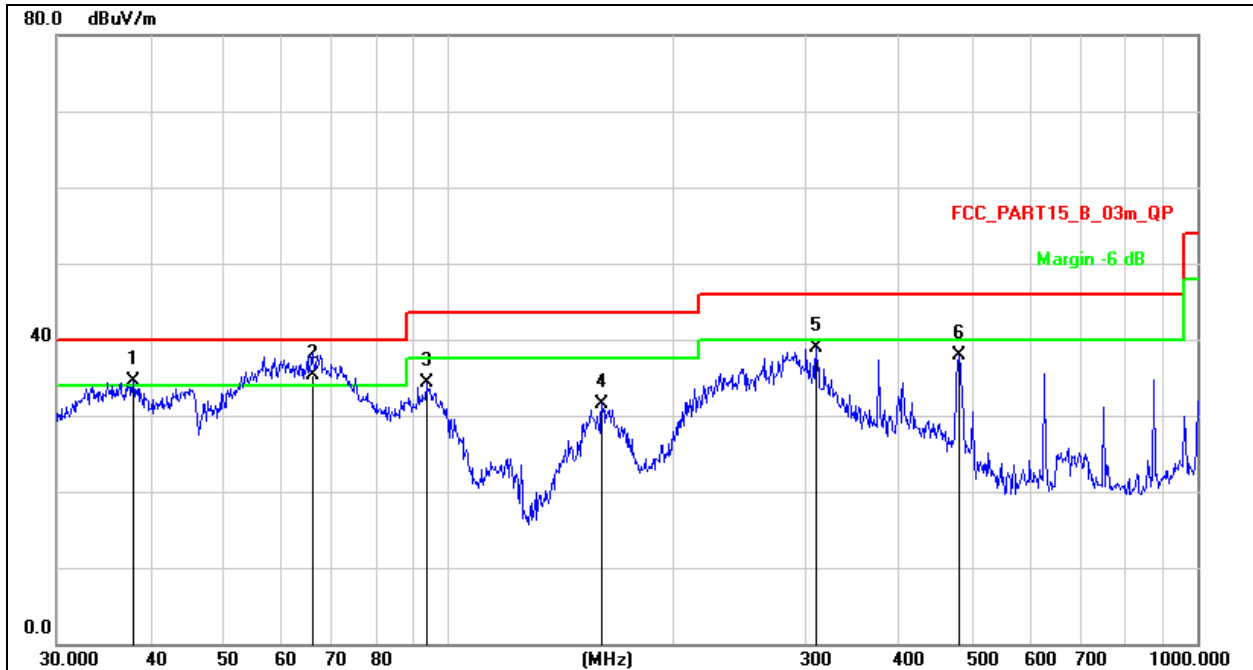
| | | | |
|----------------|--|--------------------|------------|
| Temperature: | 26 °C | Relative Humidity: | 54%RH |
| Pressure: | 101KPa | Phase : | Horizontal |
| Test Voltage : | DC 5V from adapter Input AC 120V/60Hz | Test Mode: | Working |



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 | | 73.1025 | 40.86 | -18.54 | 22.32 | 40.00 | -17.68 | QP |
| 2 | | 119.4361 | 44.11 | -17.29 | 26.82 | 43.50 | -16.68 | QP |
| 3 | ! | 245.9509 | 56.88 | -14.41 | 42.47 | 46.00 | -3.53 | QP |
| 4 | ! | 277.0935 | 56.40 | -13.72 | 42.68 | 46.00 | -3.32 | QP |
| 5 | * | 482.2156 | 51.95 | -9.05 | 42.90 | 46.00 | -3.10 | QP |
| 6 | | 750.1083 | 40.91 | -4.99 | 35.92 | 46.00 | -10.08 | QP |

| | | | |
|----------------|--|--------------------|----------|
| Temperature: | 26 °C | Relative Humidity: | 54%RH |
| Pressure: | 101KPa | Phase : | Vertical |
| Test Voltage : | DC 5V from adapter Input AC 120V/60Hz | Test Mode: | Working |

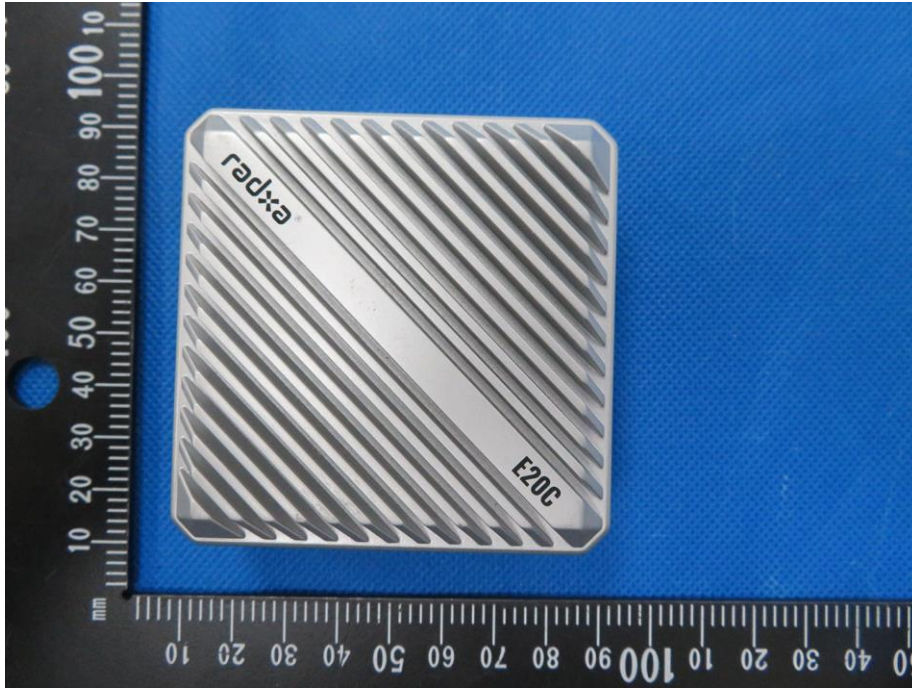

Remark:

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

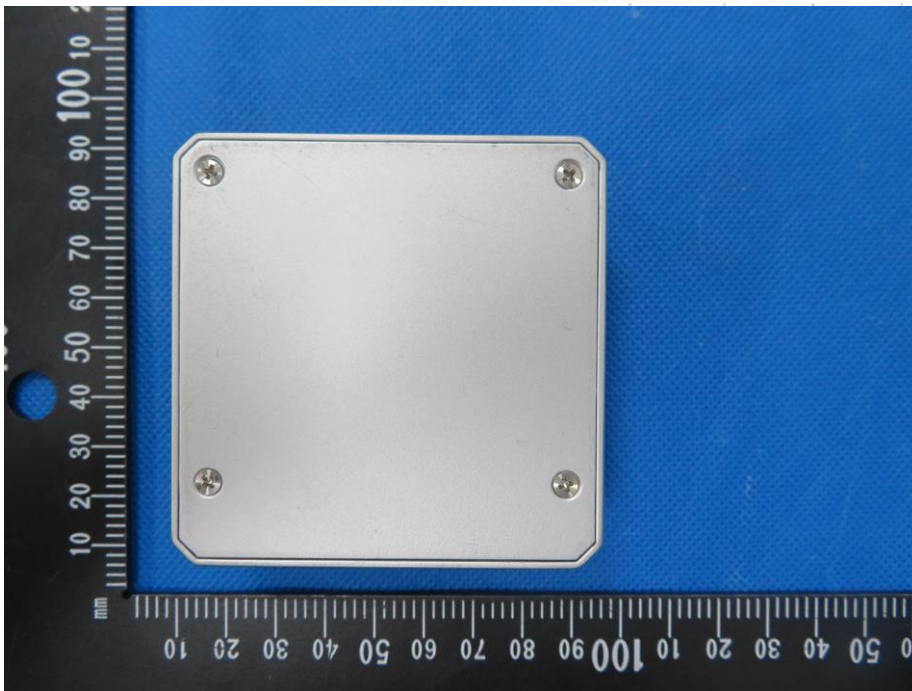
| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dB/m | Over dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|---------------|------------|----------|
| 1 | ! | 37.9450 | 49.53 | -15.12 | 34.41 | 40.00 | -5.59 | QP |
| 2 | * | 65.8031 | 52.25 | -16.85 | 35.40 | 40.00 | -4.60 | QP |
| 3 | | 93.4402 | 51.25 | -16.89 | 34.36 | 43.50 | -9.14 | QP |
| 4 | | 160.3456 | 50.26 | -18.66 | 31.60 | 43.50 | -11.90 | QP |
| 5 | | 309.9977 | 51.73 | -12.89 | 38.84 | 46.00 | -7.16 | QP |
| 6 | | 480.5276 | 46.92 | -9.10 | 37.82 | 46.00 | -8.18 | QP |

8. EUT Photographs

EUT Photo 1

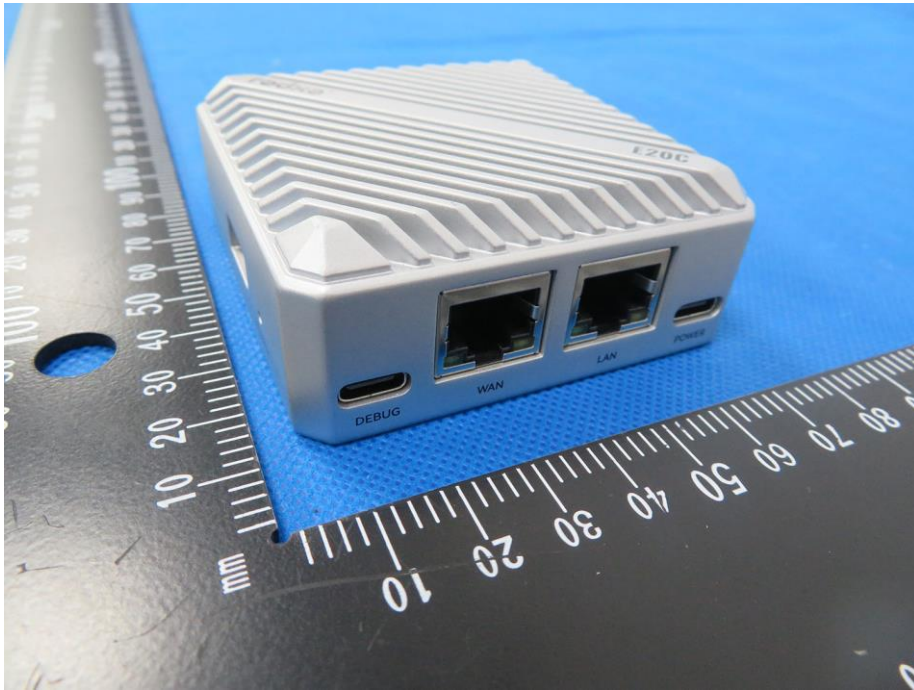


EUT Photo 2



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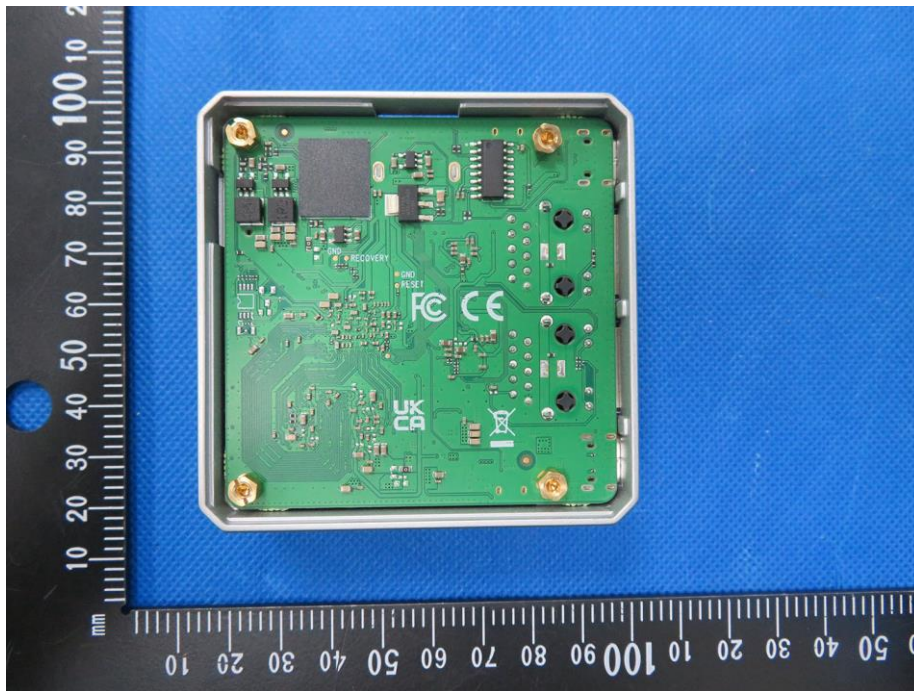
EUT Photo 3



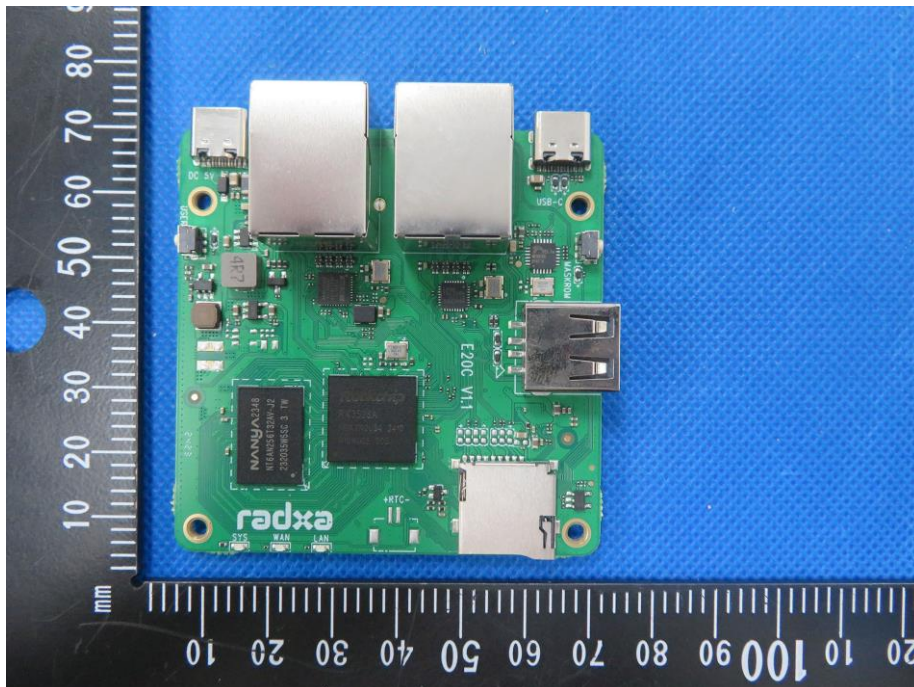
EUT Photo 4



EUT Photo 5

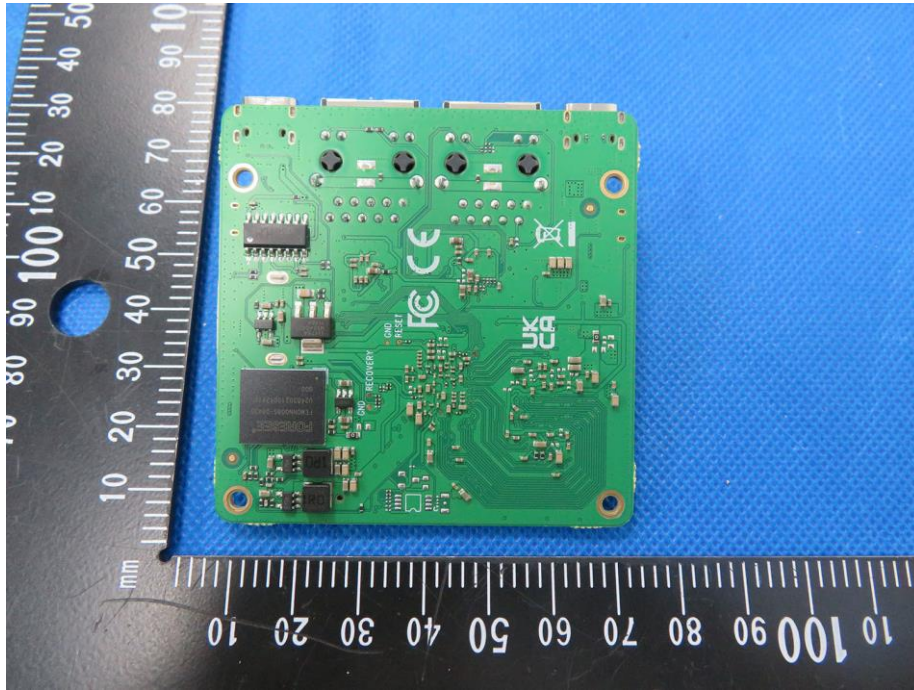


EUT Photo 6

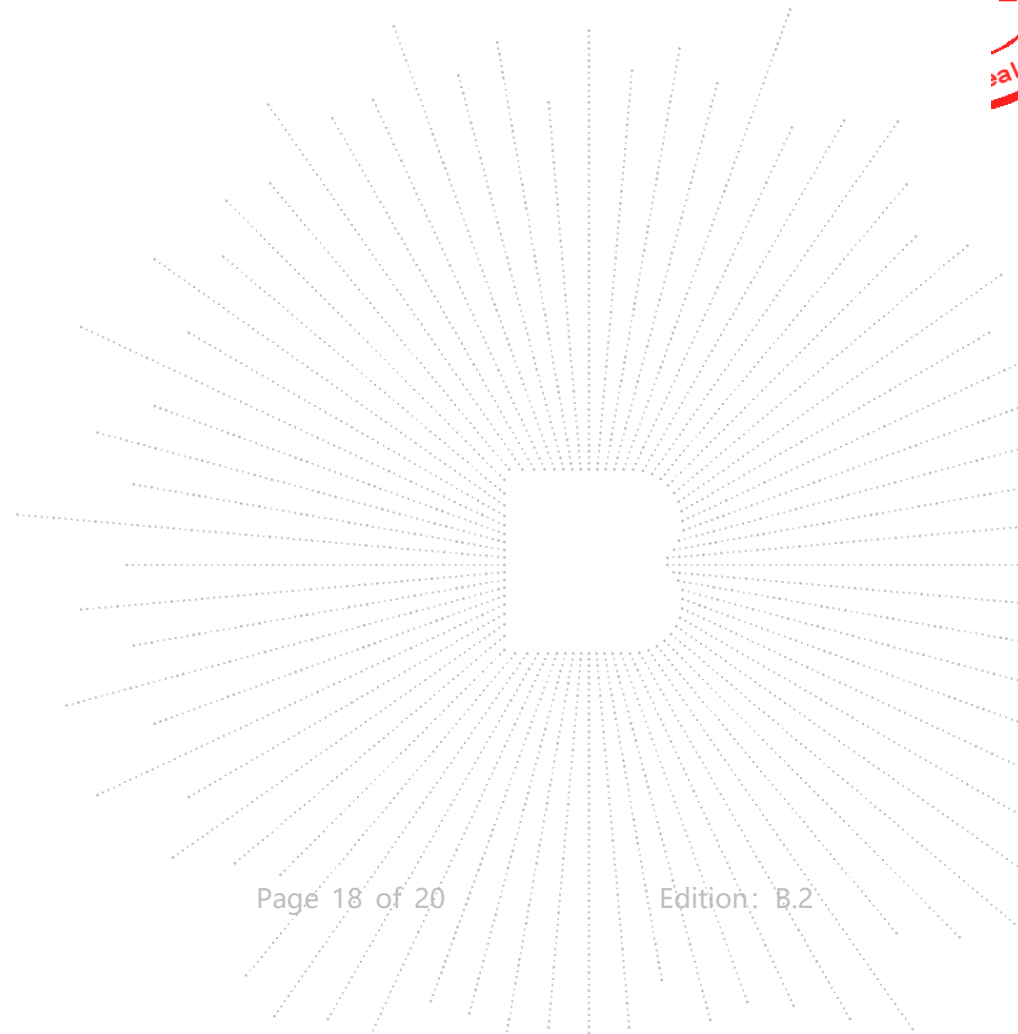


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EUT Photo 7



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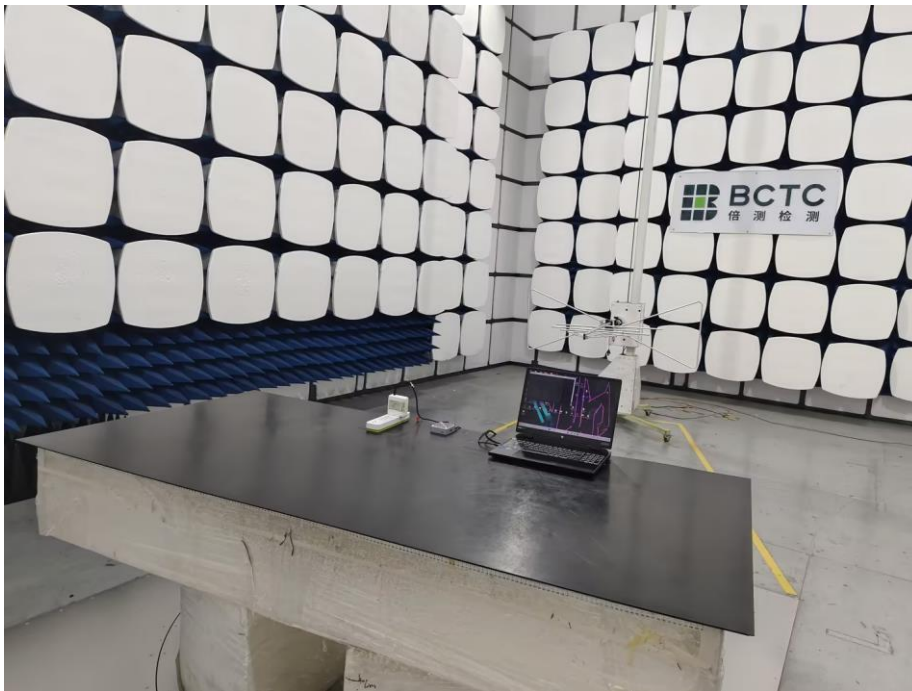


9. EUT Test Setup Photographs

Conducted emissions



Radiated emissions



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 quality system of our laboratory is in accordance with ISO/IEC17025.
8. 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

TEL: 400-788-9558

P.C.: 518103

FAX: 0755-33229357

Website: <http://www.chnbctc.com>Consultation E-mail: bctc@bctc-lab.com.cnComplaint/Advice E-mail: advice@bctc-lab.com.cn

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