

Test Report

Applicant : INTEGRATED TECHNICAL VISION LTD
Address : 12 CHIGORINA STR., KYIV 01042, UKRAINE
Product Name : U-Prox access control system
Brand Mark : U-Prox
Model : Universal reader U-Prox SE slim
FCC ID : 2BLQF-482026137EOG
Report Number : BLA-EMC-202405-A0403
Date of Receipt : 2024.05.07
Date of Test : 2024.05.07 to 2024.09.13
Test Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.225
Test Result : Pass

Compiled by:

Hugh

Review by:

Sueelle

Approved by:

Blue Zheng

Issued Date: 2024.09.13



BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

Address: Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen,
Guangdong Province, China



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Revise Record

| Version No. | Date | Description |
|-------------|------------|-------------|
| 01 | 2024.09.13 | Original |
| | | |
| | | |
| | | |

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1 General Information

1.1 General information

| | |
|--------------|---|
| Applicant | INTEGRATED TECHNICAL VISION LTD |
| Address | 12 CHIGORINA STR., KYIV 01042, UKRAINE |
| Manufacturer | INTEGRATED TECHNICAL VISION LTD |
| Address | 5, kurganny side street, Chernihiv 14013, Ukraine |
| Factory | INTEGRATED TECHNICAL VISION LTD |
| Address | 5, kurganny side street, Chernihiv 14013, ukraine |

1.2 General Description of EUT

| | |
|--|---------------------------------|
| Product Name: | U-Prox access control system |
| Model No.: | Universal reader U-Prox SE slim |
| Test Model No.: | Universal reader U-Prox SE slim |
| Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are product appearance and model name for commercial purpose. | |
| Sample(s) Status | Engineer sample |
| Hardware: | N/A |
| Software: | N/A |
| Operation Frequency: | 13.56MHz |
| Channel Numbers: | 1 |
| Modulation Type: | ASK |
| Antenna Type: | Internal Antenna |
| Antenna Gain: | 4dBi |
| Power Supply: | DC12V |
| Remark: The Antenna Gain is supplied by the customer | |

2 Test Summary

| Test Item | Section in CFR 47 | Result |
|-------------------------|-------------------|--------|
| Antenna Requirement | §15.203 | Pass |
| Radiated Emission Limit | §15.209 | Pass |
| Field Strength | §15.225(a) | Pass |
| Out of Band Emission | §15.225(b)(c) | Pass |
| Frequency Stability | §15.225(e) | Pass |
| Conducted Emission | § 15.207(a) | N/A |
| Emission Bandwidth | § 15.215(c) | Pass |

Pass: The EUT complies with the essential requirements in the standard.

3 Test Configuration

3.1 Test mode

| | |
|---|--|
| Transmitting mode: | Keep the EUT in continuously transmitting mode with modulation |
| Remark: Only the data of the worst mode would be recorded in this report. | |

3.2 Description of Support Units

| Manufacturer | Description | Model | Serial Number |
|----------------------|-------------|----------|---------------|
| Rechargeable battery | OUTDO | UTX7L-BS | N/A |

4 Laboratory information

4.1 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC — Designation No.: CN1252**

BlueAsia of Technical Services(Shenzhen) Co., Ltd has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Designation CN1252.

- **ISED — CAB identifier No.: CN0028**

BlueAsia of Technical Services(Shenzhen) Co., Ltd has been registered by Certification and Engineering Bureau of ISED for radio equipment testing with CAB identifier CN0028

4.2 Test Location

All tests were performed at:

All tests were performed at:

BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China

Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673

No tests were sub-contracted.

4.3 Test Location

| Test Item | Frequency Range | Measurement Uncertainty | Notes |
|----------------------------------|-----------------|-------------------------|-------|
| Radiated Emission | 9kHz ~ 30MHz | ± 4.34dB | (1) |
| Radiated Emission | 30MHz ~ 1000MHz | ± 4.24dB | (1) |
| Radiated Emission | 1GHz ~ 26.5GHz | ± 4.68dB | (1) |
| AC Power Line Conducted Emission | 0.15MHz ~ 30MHz | ± 3.45dB | (1) |

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 Test Instruments list

RF conducted

| Equipment | Name | Model | Manufacture | S/N | Cal. Date | Due. Date |
|-----------------|----------------------------|----------|-----------------|----------------|------------|------------|
| BLA-EMC-003-003 | Shield room | 5*3*3 | SKET | N/A | 2023/11/16 | 2025/11/15 |
| BLA-EMC-016 | Signal Generator | N5182A | Agilent | MY52420 567 | 2024/06/28 | 2025/06/27 |
| BLA-EMC-038 | Spectrum | N9020A | Agilent | MY49100 060 | 2024/08/08 | 2025/08/07 |
| BLA-EMC-042 | Power sensor | RPR3006W | DARE | 14I00889 SN042 | 2024/08/08 | 2025/08/07 |
| BLA-EMC-044 | Radio communication tester | CMW500 | R&S | 132429 | 2024/08/08 | 2025/08/07 |
| BLA-EMC-064 | Signal Generator | N5182B | KEYSIGHT | MY58108 892 | 2024/06/28 | 2025/06/27 |
| BLA-EMC-079 | Spectrum | N9020A | Agilent | MY54420 161 | 2024/08/08 | 2025/08/07 |
| BLA-EMC-088 | Audio Analyzer | ATS-1 | Audio Precision | ATS1410 94 | 2024/06/28 | 2025/06/27 |

Radiated Spurious Emissions (Below 1GHz)

| Equipment | Name | Model | Manufacture | S/N | Cal. Date | Due. Date |
|----------------|-------------------|------------------|-------------|--------|------------|------------|
| BLA-EMC-002-01 | Anechoic chamber | 9*6*6 chamber | SKET | N/A | 2024/3/27 | 2027/3/26 |
| BLA-EMC-002-02 | Control room | 966 control room | SKET | N/A | 2024/3/27 | 2027/3/26 |
| BLA-EMC-009 | EMI receiver | ESR7 | R&S | 101199 | 2024/08/08 | 2025/08/07 |
| BLA-EMC-043 | Loop antenna | FMZB1519B | Schwarzbeck | 00102 | 2024/06/29 | 2026/06/28 |
| BLA-EMC-065 | Broadband antenna | VULB9168 | Schwarzbeck | 01065P | 2024/06/29 | 2026/06/27 |
| BLA-XC-01 | Coaxial Cable | N/A | BlueAsia | V01 | N/A | N/A |
| BLA-XC-02 | Coaxial Cable | N/A | BlueAsia | V02 | N/A | N/A |

Radiated Spurious Emissions (Above 1GHz)

| Equipment | Name | Model | Manufacture | S/N | Cal. Date | Due. Date |
|----------------|-------------------|---------------------|-------------|---------------|------------|------------|
| BLA-EMC-001-01 | Anechoic chamber | 9*6*6 chamber | SKET | N/A | 2023/11/16 | 2026/11/15 |
| BLA-EMC-001-02 | Control Room | 966 control room | SKET | N/A | 2023/11/16 | 2025/11/15 |
| BLA-EMC-008 | Spectrum | FSP40 | R&S | 100817 | 2024/08/08 | 2025/08/07 |
| BLA-EMC-012 | Broadband antenna | VULB9168 | Schwarzbeck | 00836 P:00227 | 2022/10/12 | 2025/10/11 |
| BLA-EMC-013 | Horn Antenna | BBHA9120D | Schwarzbeck | 01892 | 2024/06/29 | 2026/06/28 |
| BLA-EMC-014 | Amplifier | PA_000318 G-45 | SKET | PA20180 43003 | 2024/08/08 | 2025/08/07 |
| BLA-EMC-046 | Filter bank | 2.4G/5G Filter bank | SKET | N/A | 2024/06/28 | 2025/06/27 |
| BLA-EMC-061 | Receiver | ESPI7 | R&S | 101477 | 2024/06/28 | 2025/06/27 |
| BLA-EMC-066 | Amplifier | LNPA_30M0 1G-30 | SKET | SK20210 60801 | 2024/06/28 | 2025/06/27 |
| BLA-EMC-086 | Amplifier | LNPA_18G4 0G-50dB | SKET | SK20220 71301 | 2024/06/28 | 2025/06/27 |
| BLA-EMC-087 | Horn Antenna | BBHA 9170 | Schwarzbeck | 1106 | 2024/06/29 | 2026/06/28 |

| | | | | | | |
|-----------|---------------|-----|----------|-----|-----|-----|
| BLA-XC-03 | Coaxial Cable | N/A | BlueAsia | V03 | N/A | N/A |
| BLA-XC-04 | Coaxial Cable | N/A | BlueAsia | V04 | N/A | N/A |

Test Software Record:

| Software No. | Software Name | Manufacture | Software version | Test site |
|--------------|--------------------------------|-------------|------------------|-----------|
| BLA-EMC-S001 | EZ-EMC | EZ | EEMC-3A1+ | RE |
| BLA-EMC-S002 | EZ-EMC | EZ | EEMC-3A1+ | RE |
| BLA-EMC-S010 | MTS 8310 | MW | 2.0.0.0 | RF |
| BLA-EMC-S014 | Bluetooth and WiFi Test System | Tonscend | 2.5.77.0418 | RF |

6 Antenna Requirement

6.1 Standard Applicable

According to FCC Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

6.2 Test Result

This product has an integral antenna, fulfill the requirement of this section.

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7 Radiated Emissions

7.1 Standard Applicable

According to §15.225(a), The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

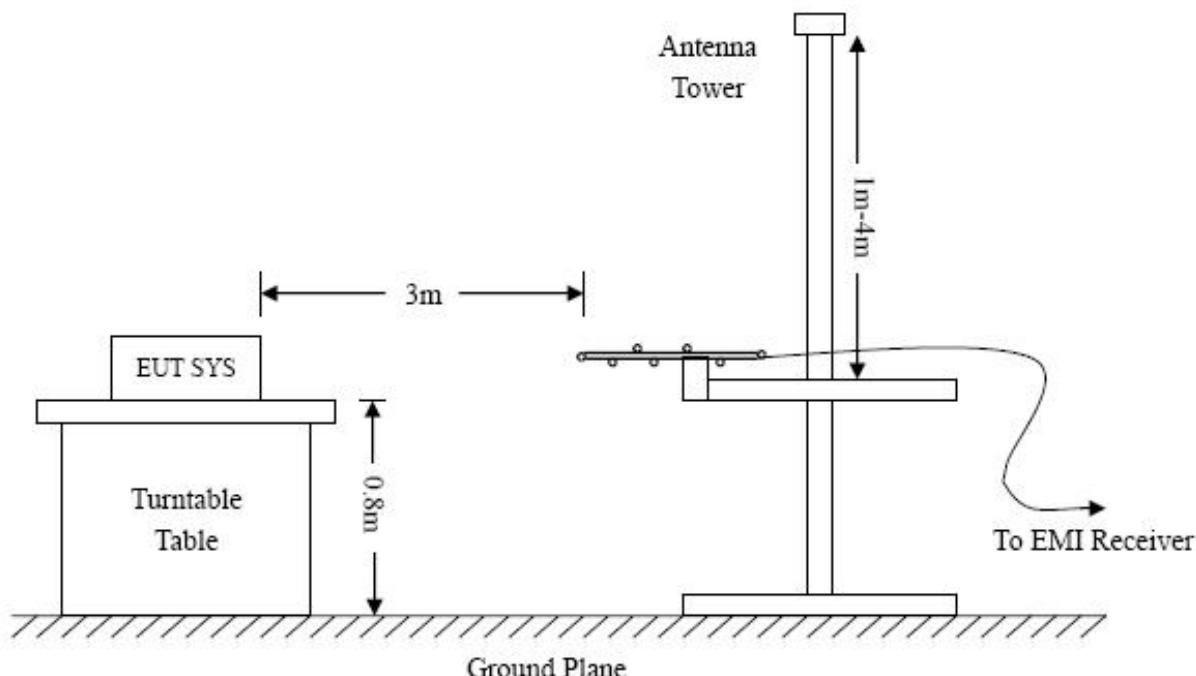
According to §15.225(d) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in §15.209.

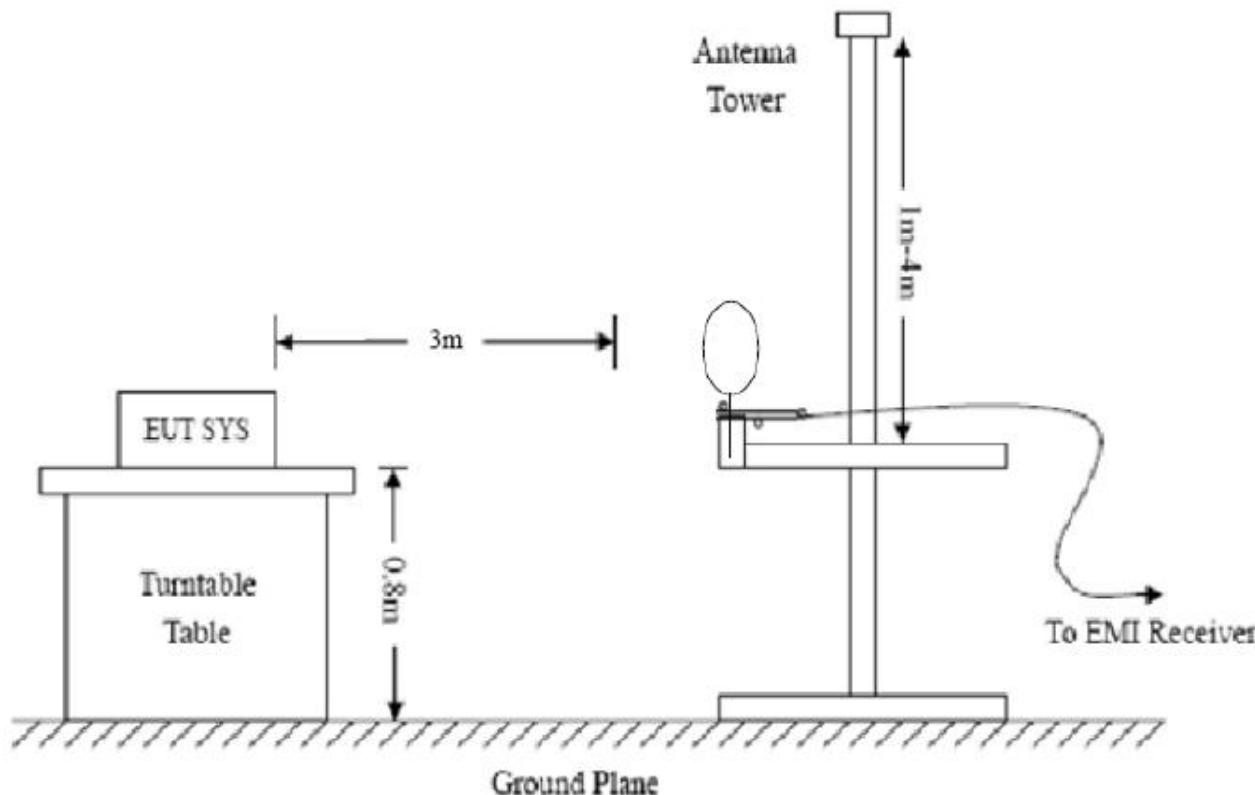
Note: Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

7.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.225(d) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.





Frequency :9kHz-30MHz
RBW=10KHz,
VBW =30KHz
Sweep time= Auto
Trace = max hold
Detector function = peak

Frequency :30MHz-1GHz
RBW=120KHz,
VBW=300KHz
Sweep time= Auto
Trace = max hold
Detector function = peak, QP

Frequency :Above 1GHz
RBW=1MHz,
VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto
Trace = max hold
Detector function = peak, AV

7.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of $-6\text{dB}\mu\text{V}$ means the emission is $6\text{dB}\mu\text{V}$ below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

7.4 Environmental Conditions

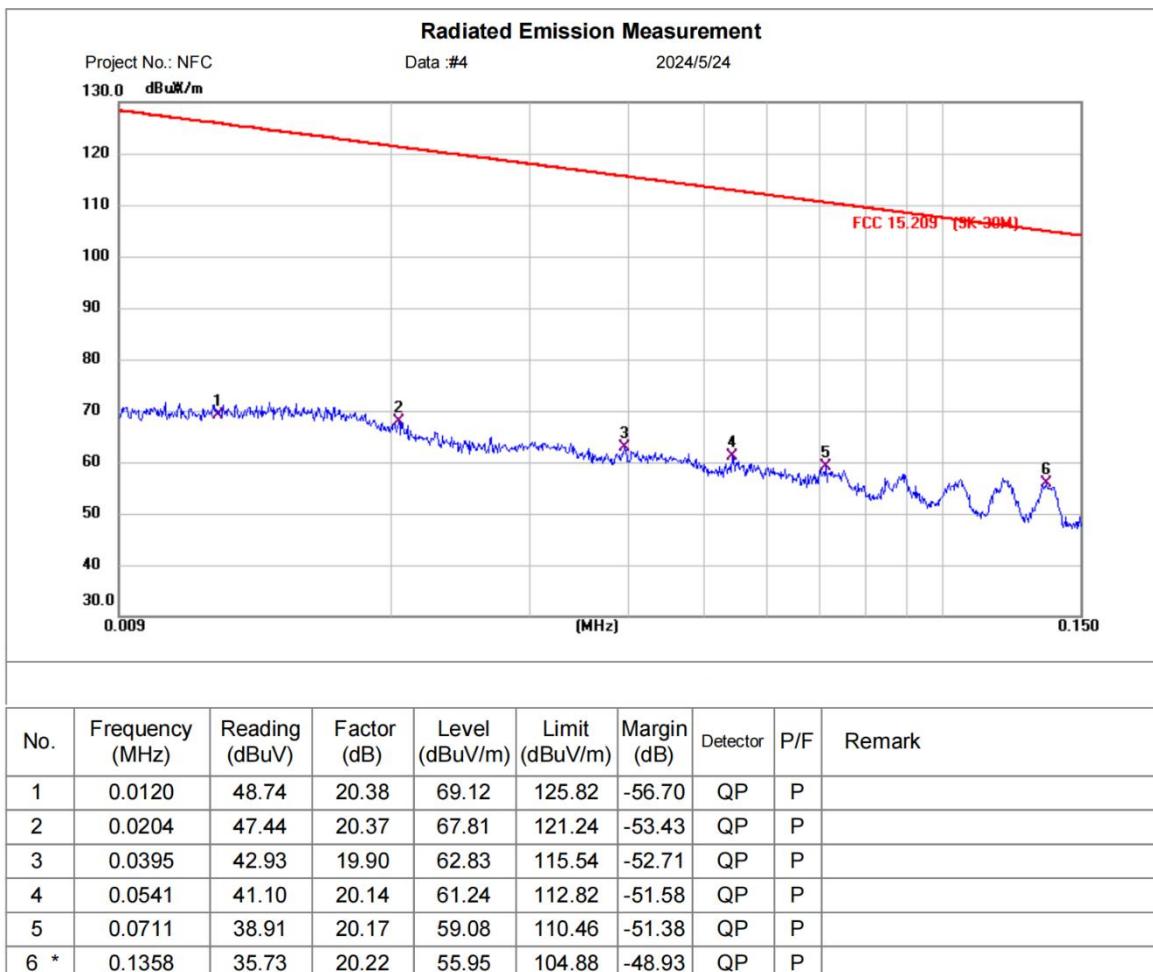
| | |
|--------------------|-----------|
| Temperature: | 26°C |
| Relative Humidity: | 52% |
| ATM Pressure: | 1022 mbar |

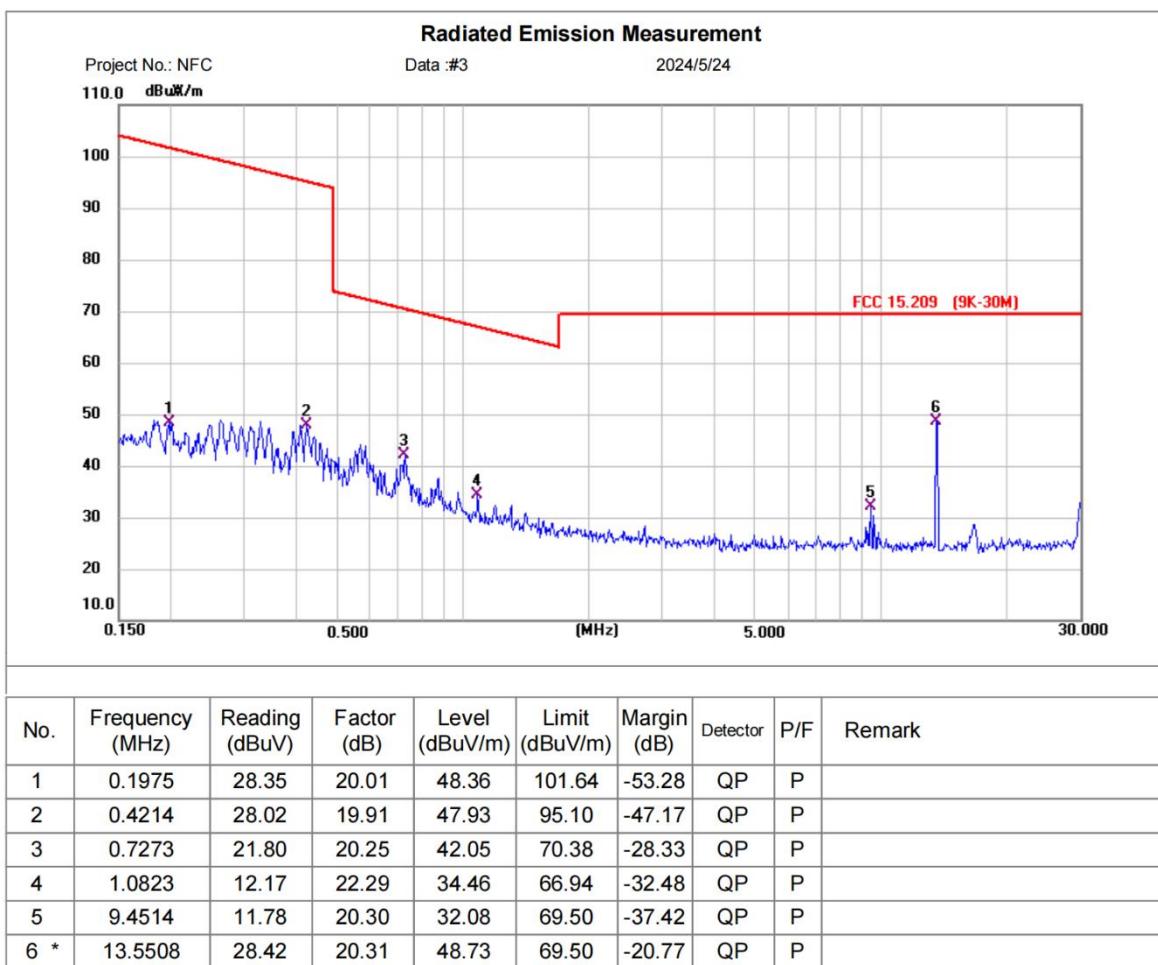
7.5 Summary of Test Results/Plots

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Tel: +86-755-23059481

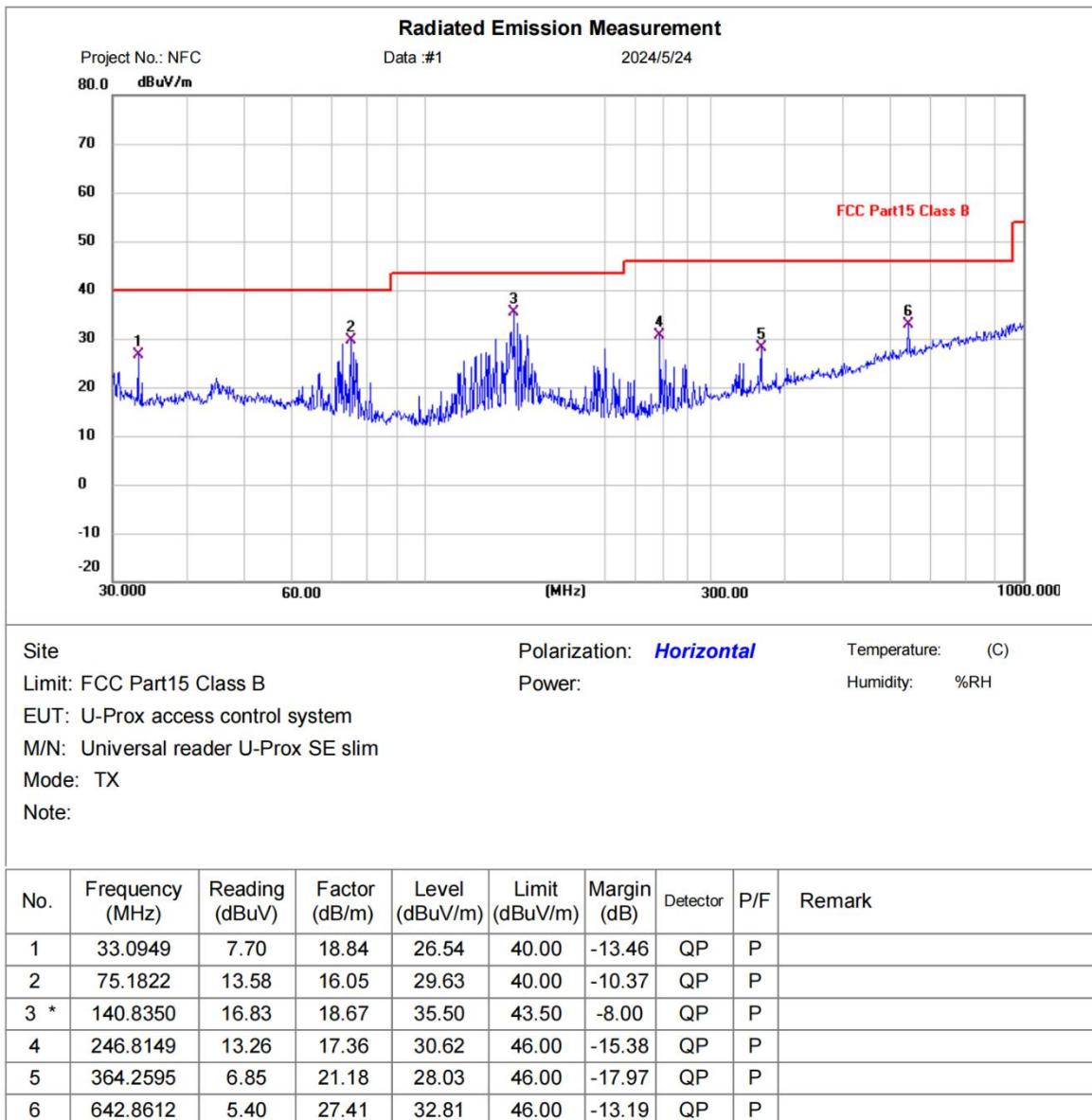
Email: marketing@cblueasia.com www.cblueasia.com

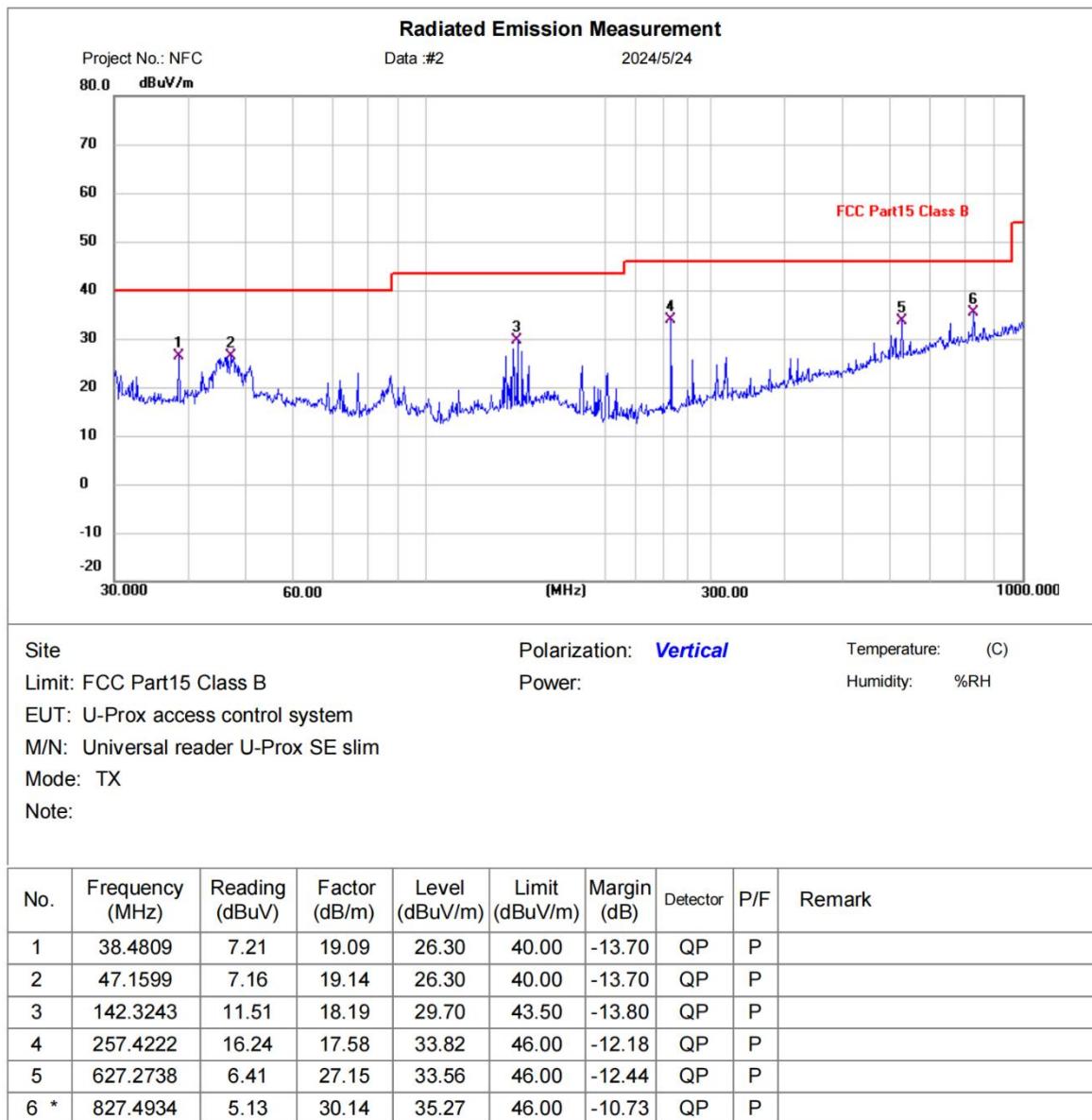
Measurement Data
■ 9 kHz ~ 30 MHz
Coplane: (Worst case)




■ Below 1GHz

Horizontal:



Vertical:

Remark:

1. Final Level = Receiver Read level + Correct factor
2. "", means this data is the too weak instrument of signal is unable to test.
3. Correct factor = Antenna Factor + Cable Loss – Preamplifier Factor

8 OUT OF BAND EMISSIONS

8.1 Standard Applicable

According to FCC 15.225 (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters. (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

8.2 Test Procedure

As the radiation test, set the RBW=10kHz VBW=30kHz, observed the outside band of 13.11MHz to 14.01MHz, than mark the higher-level emission for comparing with the FCC rules.

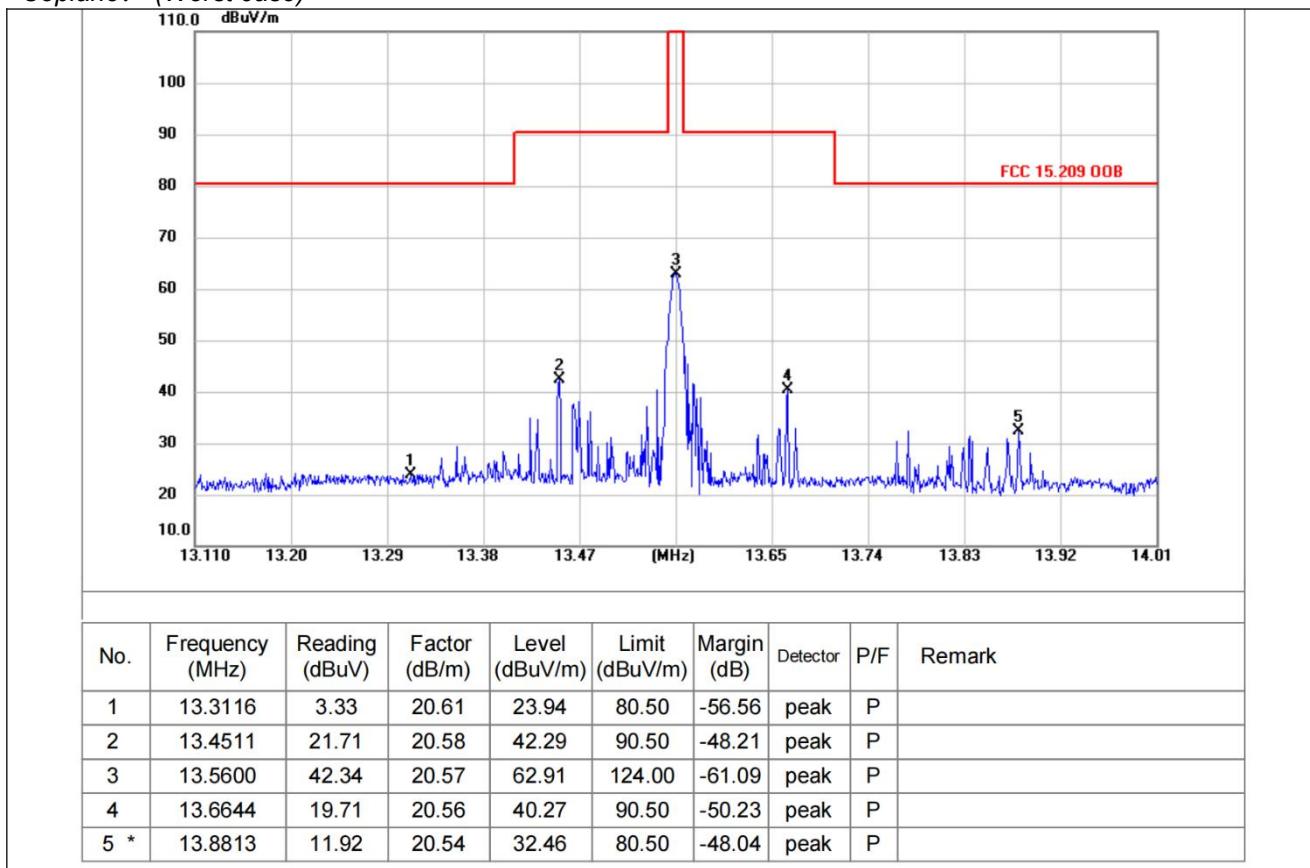
8.3 Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 26° C |
| Relative Humidity: | 57% |
| ATM Pressure: | 1022 mbar |

8.4 5.4 Summary of Test Results/Plots

Out of band emission

Coplane: (Worst case)



9 Frequency Stability

9.1 Standard Applicable

According to 15.225(e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

9.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure.

9.3 Environmental Conditions

| | |
|--------------------|-----------|
| Relative Humidity: | 55% |
| ATM Pressure: | 1015 mbar |

9.4 Summary of Test Results/Plots

| Reference Frequency: 13.56MHz, Limit: 100ppm | | | |
|--|--------------------------------|-----------------|-------------|
| Environment Temperature (°C) | 9.4.1.1.1 Power Supplied (VDC) | Frequency Error | |
| | | Error (Hz) | Error (ppm) |
| 50 | 12.0 | 114 | 8.41 |
| 40 | 12.0 | 113 | 8.33 |
| 30 | 12.0 | 122 | 9.00 |
| 20 | 12.0 | 121 | 8.92 |
| 10 | 12.0 | 120 | 8.85 |
| 0 | 12.0 | 121 | 8.92 |
| -10 | 12.0 | 116 | 8.55 |
| -20 | 12.0 | 119 | 8.78 |

| Reference Frequency: 13.56MHz, Limit: 100ppm | | | |
|--|----------------------|-----------------|-------------|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Error | |
| | | Error (Hz) | Error (ppm) |
| 20 | 10.8 | 116 | 8.55 |
| | 12.0 | 115 | 8.48 |
| | 13.2 | 101 | 7.45 |

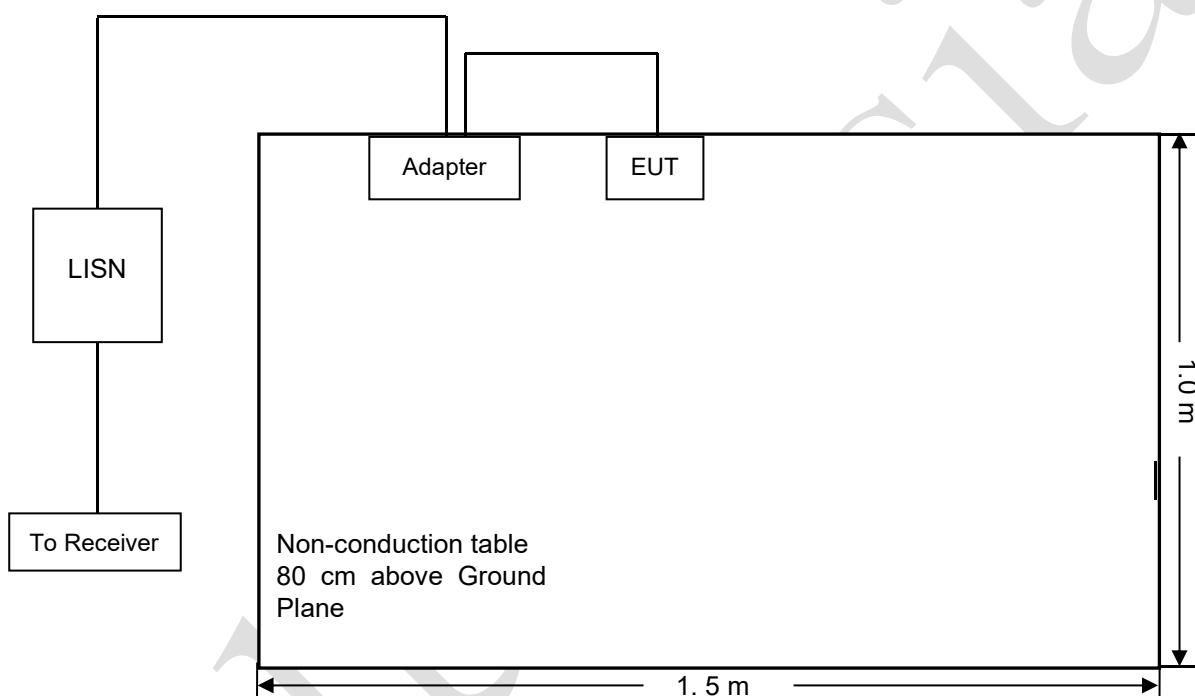
10 Conducted Emissions

10.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

10.2 Basic Test Setup Block Diagram



10.3 Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 25 °C |
| Relative Humidity: | 52% |
| ATM Pressure: | 1012 mbar |

10.4 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

| | |
|------------------------------|---------|
| Start Frequency | 150 kHz |
| Stop Frequency | 30 MHz |
| Sweep Speed | Auto |
| IF Bandwidth | 10 kHz |
| Quasi-Peak Adapter Bandwidth | 9 kHz |
| Quasi-Peak Adapter Mode | Normal |

10.5 Summary of Test Results/Plots

N/A

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11 EMISSION BANDWIDTH

11.1 Applicable Standard

According to 15.215 (c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

11.2 Test Procedure

According to the ANSI 63.10-2013, the emission bandwidth test method as follows.

Set span = 10kHz, centered on a transmitting channel

RBW \geq 1% 20dB Bandwidth, VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down of the emission.

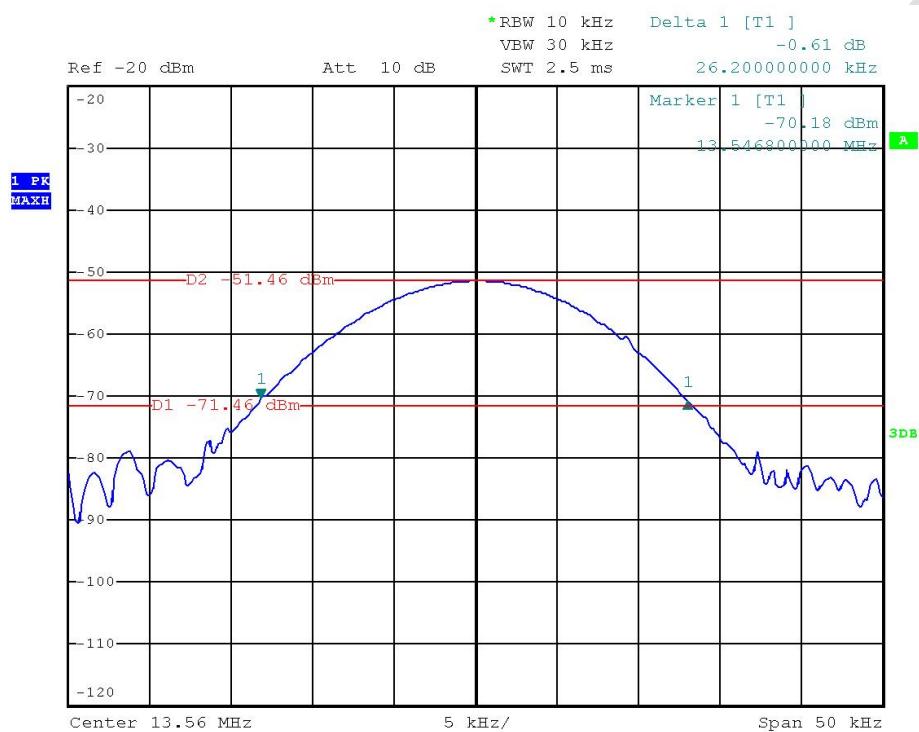
11.3 Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 26 °C |
| Relative Humidity: | 45% |
| ATM Pressure: | 1019 mbar |

11.4 Summary of Test Results/Plots

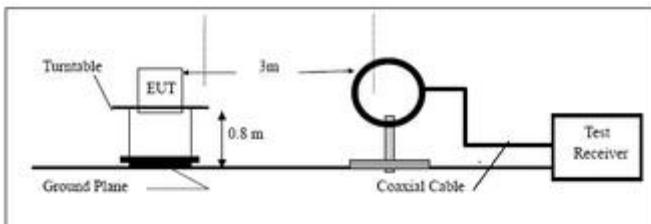
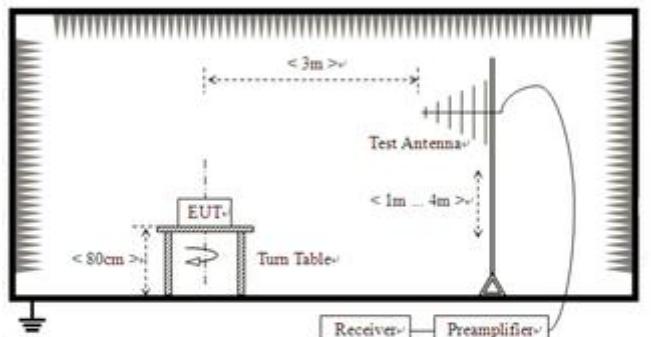
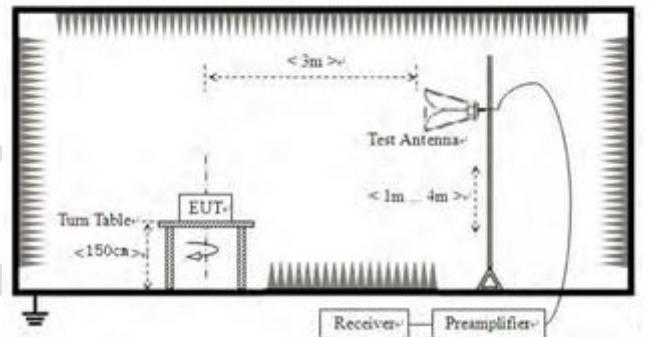
| Tx Frequency | 20dB Emission bandwidth |
|--------------|-------------------------|
| 13.56MHz | 26.20KHz |

Please refer to the test plots as below:



jjjj
Date: 27.MAY.2024 20:25:30

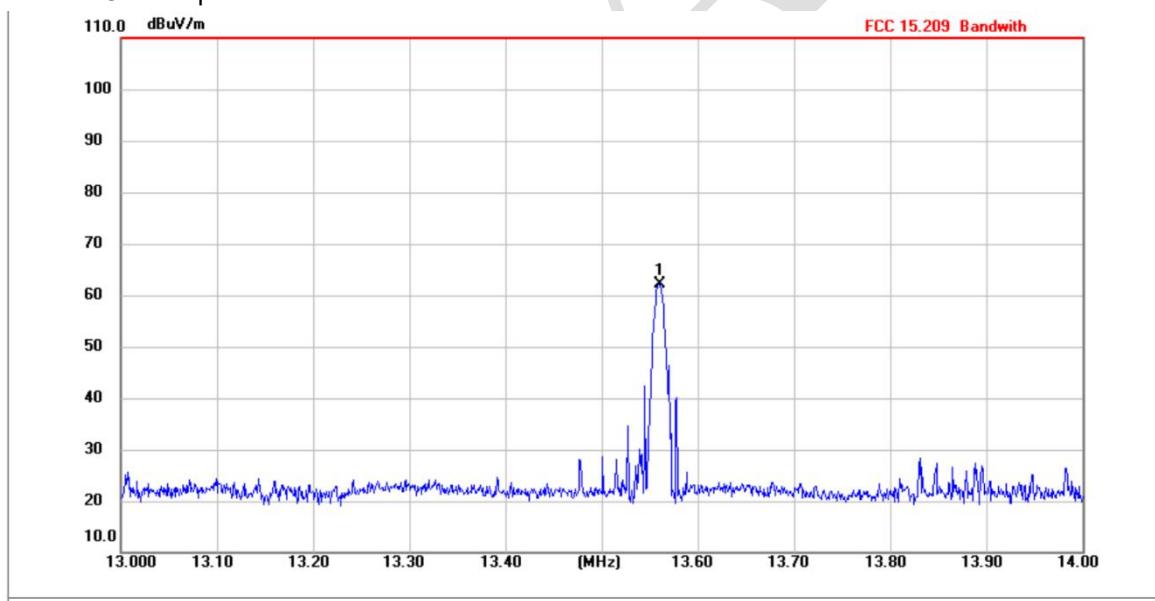
12 Field Strength of the Fundamental Signal

| | |
|-------------------|--|
| Test Requirement: | FCC Part15 C Section 15.225(a) |
| Test Method: | ANSI C63.10:2013 |
| Limit: | (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters. |
| Test setup: |    <p>a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was</p> |

| | |
|-------------------|---|
| | <p>tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.</p> <p>Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</p> |
| Test Instruments: | Refer to section 6.0 for details |
| Test mode: | Refer to section 5.2 for details |
| Test results: | Pass |

Measurement Data

Polarization: Coaxial plane

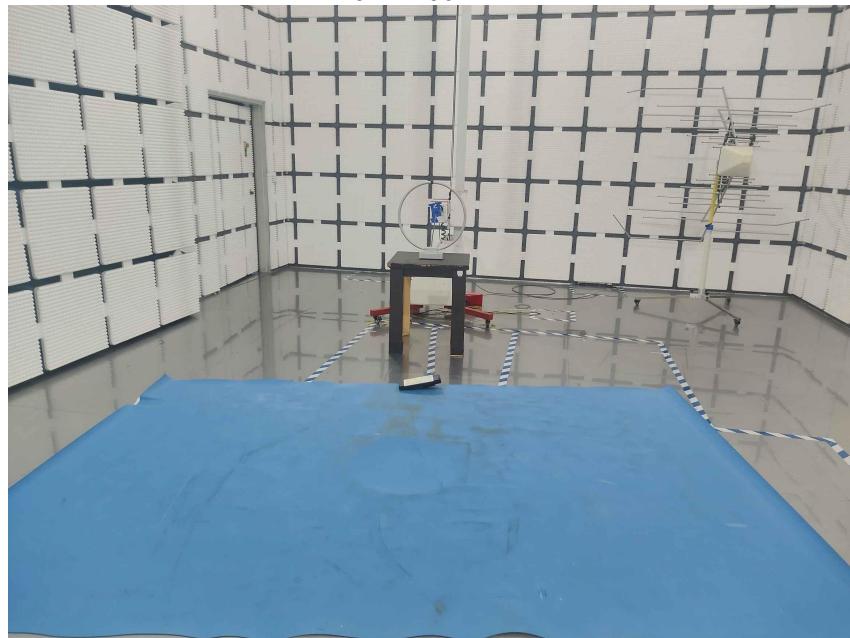


| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | P/F | Remark |
|-----|-----------------|----------------|---------------|----------------|----------------|-------------|----------|-----|--------|
| 1 * | 13.5600 | 41.46 | 20.57 | 62.03 | 124.00 | -61.97 | peak | P | |

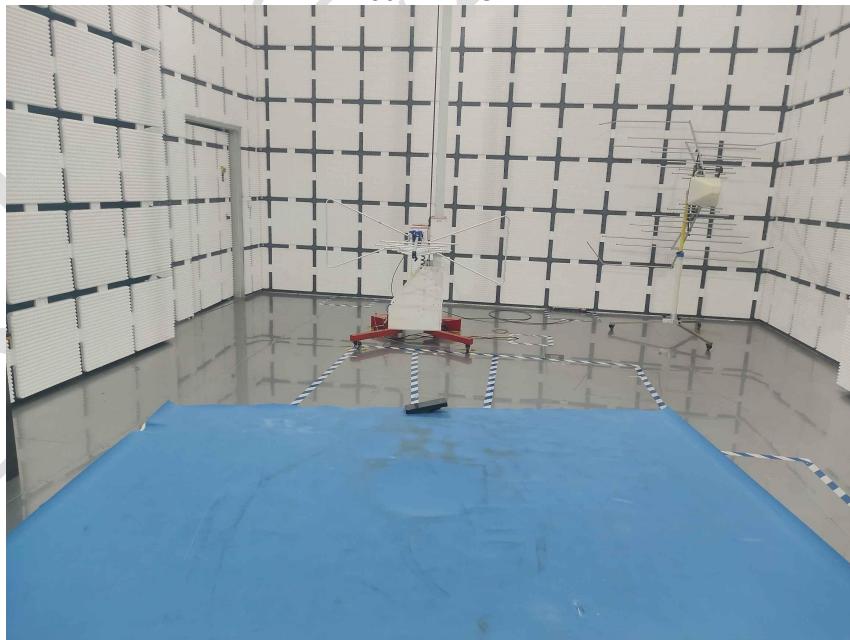
13 Test Setup Photo

Radiated Emission

9KHz-30MHz



30MHz-1G



14 EUT Constructional Details

Reference to the test report No. BLA-EMC-202405-A0401

*** End of Report ***

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of BlueAsia, this report can't be reproduced except in full.

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