

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                        |                                                                                     |                                                |                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Prüfbericht-Nr.:</b><br><i>Test report no.:</i>                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>CN25HTIW 001</b>                                                                                                                                                                                                                                                                                                                    | <b>Auftrags-Nr.:</b><br><i>Order no.:</i>                                           | 170423584                                      | Seite 1 von 29<br>Page 1 of 29                                                                                             |
| <b>Kunden-Referenz-Nr.:</b><br><i>Client reference no.:</i>                                                                                                                                                                                                                                                                                                                                                                                                          | 2062640                                                                                                                                                                                                                                                                                                                                | <b>Auftragsdatum:</b><br><i>Order date:</i>                                         | 2025.06.30                                     |                                                                                                                            |
| <b>Auftraggeber:</b><br><i>Client:</i>                                                                                                                                                                                                                                                                                                                                                                                                                               | AEB INDUSTRIALE S.R.L.<br>VIA Brodolini, 8 - Località Crespellano 40053 - VALSAMOGGIA (BO), Italy.                                                                                                                                                                                                                                     |                                                                                     |                                                |                                                                                                                            |
| <b>Prüfgegenstand:</b><br><i>Test item:</i>                                                                                                                                                                                                                                                                                                                                                                                                                          | Entertainment System                                                                                                                                                                                                                                                                                                                   |                                                                                     |                                                |                                                                                                                            |
| <b>Bezeichnung / Typ-Nr.:</b><br><i>Identification / Type no.:</i>                                                                                                                                                                                                                                                                                                                                                                                                   | ES 1203                                                                                                                                                                                                                                                                                                                                |                                                                                     |                                                |                                                                                                                            |
| <b>Auftrags-Inhalt:</b><br><i>Order content:</i>                                                                                                                                                                                                                                                                                                                                                                                                                     | FCC&IC approval                                                                                                                                                                                                                                                                                                                        |                                                                                     |                                                |                                                                                                                            |
| <b>Prüfgrundlage:</b><br><i>Test specification:</i>                                                                                                                                                                                                                                                                                                                                                                                                                  | CFR47 FCC Part 15: Subpart C Section 15.247<br>CFR47 FCC Part 15: Subpart C Section 15.207<br>CFR47 FCC Part 15: Subpart C Section 15.209<br>CFR47 FCC Part 2: Section 2.1091<br>RSS-247 Issue 4 July 24, 2025<br>RSS-Gen Issue 5 April 2018, Amendment 1(March 2019), Amendment 2(February 2021)<br>RSS-102 Issue 6 December 15, 2023 |                                                                                     |                                                |                                                                                                                            |
| <b>Wareneingangsdatum:</b><br><i>Date of sample receipt:</i>                                                                                                                                                                                                                                                                                                                                                                                                         | 2025.07.18                                                                                                                                                                                                                                                                                                                             |  |                                                |                                                                                                                            |
| <b>Prüfmuster-Nr.:</b><br><i>Test sample no.:</i>                                                                                                                                                                                                                                                                                                                                                                                                                    | A004046419-001                                                                                                                                                                                                                                                                                                                         |                                                                                     |                                                |                                                                                                                            |
| <b>Prüfzeitraum:</b><br><i>Testing period:</i>                                                                                                                                                                                                                                                                                                                                                                                                                       | Refer to test report                                                                                                                                                                                                                                                                                                                   |                                                                                     |                                                |                                                                                                                            |
| <b>Ort der Prüfung:</b><br><i>Place of testing:</i>                                                                                                                                                                                                                                                                                                                                                                                                                  | Refer to section 2                                                                                                                                                                                                                                                                                                                     |                                                                                     |                                                |                                                                                                                            |
| <b>Prüflaboratorium:</b><br><i>Testing laboratory:</i>                                                                                                                                                                                                                                                                                                                                                                                                               | TÜV Rheinland<br>(Shenzhen) Co., Ltd.                                                                                                                                                                                                                                                                                                  |                                                                                     |                                                |                                                                                                                            |
| <b>Prüfergebnis*:</b><br><i>Test result*:</i>                                                                                                                                                                                                                                                                                                                                                                                                                        | Pass                                                                                                                                                                                                                                                                                                                                   |                                                                                     |                                                |                                                                                                                            |
| <b>geprüft von:</b><br><i>tested by:</i>                                                                                                                                                                                                                                                                                                                                                                                                                             |  <b>Jonath an Li</b><br>Signed by: Jonathan Li                                                                                                                                                                                                      |                                                                                     | <b>genehmigt von:</b><br><i>authorized by:</i> |  <b>Lin Lin</b><br>Signed by: Lin Lin |
| <b>Datum:</b><br><i>Date:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2025-09-15                                                                                                                                                                                                                                                                                                                             | <b>Ausstellungsdatum:</b><br><i>Issue date:</i>                                     | 2025-09-22                                     |                                                                                                                            |
| <b>Stellung / Position:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                          | Project Manager                                                                                                                                                                                                                                                                                                                        | <b>Stellung / Position:</b>                                                         | Authorizer                                     |                                                                                                                            |
| <b>Sonstiges / Other:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                            | FCC ID: 2ADDV-ES1203<br>IC: 12207-ES1203<br>HVIN: ES 1203                                                                                                                                                                                                                                                                              |                                                                                     |                                                |                                                                                                                            |
| <b>Zustand des Prüfgegenstandes bei Anlieferung:</b><br><i>Condition of the test item at delivery:</i>                                                                                                                                                                                                                                                                                                                                                               | Prüfmuster vollständig und unbeschädigt<br><i>Test item complete and undamaged</i>                                                                                                                                                                                                                                                     |                                                                                     |                                                |                                                                                                                            |
| * Legende:                                                                                                                                                                                                                                                                                                                                                                                                                                                           | P(ass) = entspricht o.g. Prüfgrundlage(n)                                                                                                                                                                                                                                                                                              | F(ail) = entspricht nicht o.g. Prüfgrundlage(n)                                     | N/A = nicht anwendbar                          | N/T = nicht getestet                                                                                                       |
| * Legend:                                                                                                                                                                                                                                                                                                                                                                                                                                                            | P(ass) = passed a.m. test specification(s)                                                                                                                                                                                                                                                                                             | F(ail) = failed a.m. test specification(s)                                          | N/A = not applicable                           | N/T = not tested                                                                                                           |
| <b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b><br><i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i> |                                                                                                                                                                                                                                                                                                                                        |                                                                                     |                                                |                                                                                                                            |

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Test report no.:

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### Anmerkungen Remarks

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <p>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.</p> <p>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</p> <p><i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2 | <p>Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. Informationen zur Verifizierung der Authentizität unserer Dokumente erhalten Sie auf folgender Webseite: <a href="http://go.tuv.com/digital-signature">go.tuv.com/digital-signature</a></p> <p><i>As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged. For information on verifying the authenticity of our documents, please visit the following website: <a href="http://go.tuv.com/digital-signature">go.tuv.com/digital-signature</a></i></p> |
| 3 | <p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.</p> <p>Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i></p> <p><i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4 | <p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p>                                                                                                                                                                                                                                                                                       |

## ***Test Summary***

**5.1.1 ANTENNA REQUIREMENT**

RESULT: Pass

**5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER**

RESULT: Pass

**5.1.3 CONDUCTED POWER SPECTRAL DENSITY**

RESULT: Pass

**5.1.4 6dB BANDWIDTH**

RESULT: Pass

**5.1.5 99% BANDWIDTH**

RESULT: Pass

**5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH**

RESULT: Pass

**5.1.7 RADIATED SPURIOUS EMISSION**

RESULT: Pass

**5.1.8 20dB BANDWIDTH**

RESULT: Pass

**5.1.9 CARRIER FREQUENCY SEPARATION**

RESULT: Pass

**5.1.10 NUMBER OF HOPPING FREQUENCY**

RESULT: Pass

**5.1.11 TIME OF OCCUPANCY**

RESULT: Pass

**5.1.12 CONDUCTED EMISSION ON AC MAINS**

RESULT: Pass

**6.1.1 ELECTROMAGNETIC FIELDS**

RESULT: Pass

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## 1 General Remarks

### 1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Photographs of the Test Set-up

Appendix 2: Test Results

## 2 Test Sites

### 2.1 Test Facilities

**TÜV Rheinland (Shenzhen) Co., Ltd.**

2-3F, 101 & 102, No.2, Nuclear Power Industrial Park, Fuming Community, Fucheng Street,  
Longhua District, Shenzhen 518000, People's Republic of China

A2LA Cert. No.: 5162.01

FCC Accreditation Designation No.: 694916

ISED wireless device testing laboratory: 25069

## 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**

For the measurement Equipment list, refer to the Appendix 2.

## 2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

| Parameter                                              | Uncertainty (k=2)     |
|--------------------------------------------------------|-----------------------|
| RF output power, conducted                             | ± 0.99 dB             |
| Occupied Channel Bandwidth                             | ± 2.08 %              |
| RF power density, conducted                            | ± 0.99 dB             |
| Unwanted Emissions, conducted                          | ± 0.89 dB             |
| All emissions, radiated                                | ±4.17 dB              |
| Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz) | ± 3.70 dB / ± 3.30 dB |

## 2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix 2 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) Co., Ltd. file for certification follow-up purposes.

## 2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 2-3F, 101 & 102, No.2, Nuclear Power Industrial Park, Fuming Community, Fucheng Street, Longhua District, Shenzhen 518000, People's Republic of China. is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

### 3 General Product Information

#### 3.1 Product Function and Intended Use

The submitted model **ES 1203** is Entertainment System. The unit supports Bluetooth wireless technologies.

According to the above information, all applicable tests were performed on **ES 1203** in this report.

For details refer to the User Manual, Technical Description and Circuit Diagram.

#### 3.2 Ratings and System Details

Table 2: Technical Specification of EUT

| General Information of EUT                              | Value                                                  |
|---------------------------------------------------------|--------------------------------------------------------|
| Kind of Equipment                                       | Entertainment System                                   |
| Type Designation                                        | <b>ES 1203</b>                                         |
| Classification of Receiver                              | Category 1                                             |
| Operating Temperature Range                             | 0 °C ~ 45 °C                                           |
| Rated input                                             | AC 100-120V, AC 220-240V 50Hz/60Hz                     |
| Testing Voltage                                         | AC 120V, 60Hz for complete machine, DC 3.3V for module |
| Protection Class                                        | I                                                      |
| <b>Technical Specification of Bluetooth (dual mode)</b> |                                                        |
| Operating Frequency band                                | 2402MHz to 2480 MHz                                    |
| Modulation                                              | GFSK, 8DPSK, $\pi/4$ DQPSK                             |
| Channel Number                                          | BR & EDR mode:79 channels, Low Energy mode:40 channels |
| Channel separation                                      | BR & EDR mode:1MHz, Low Energy mode:1MHz, 2MHz         |
| Extreme Temperature Range                               | 0°C to +45°C                                           |
| Antenna Type                                            | PCB Layout Antenna                                     |
| Antenna Gain                                            | 3.3 dBi Max                                            |
| Note: All information as declared by the manufacturer.  |                                                        |

**Table 3: RF Channel and Frequency of BDR/EDR**

| RF Channel | Frequency (MHz) | RF Channel | Frequency (MHz) | RF Channel | Frequency (MHz) | RF Channel | Frequency (MHz) |
|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 0          | 2402.00         | 20         | 2422.00         | 40         | 2442.00         | 60         | 2462.00         |
| 1          | 2403.00         | 21         | 2423.00         | 41         | 2443.00         | 61         | 2463.00         |
| 2          | 2404.00         | 22         | 2424.00         | 42         | 2444.00         | 62         | 2464.00         |
| 3          | 2405.00         | 23         | 2425.00         | 43         | 2445.00         | 63         | 2465.00         |
| 4          | 2406.00         | 24         | 2426.00         | 44         | 2446.00         | 64         | 2466.00         |
| 5          | 2407.00         | 25         | 2427.00         | 45         | 2447.00         | 65         | 2467.00         |
| 6          | 2408.00         | 26         | 2428.00         | 46         | 2448.00         | 66         | 2468.00         |
| 7          | 2409.00         | 27         | 2429.00         | 47         | 2449.00         | 67         | 2469.00         |
| 8          | 2410.00         | 28         | 2430.00         | 48         | 2450.00         | 68         | 2470.00         |
| 9          | 2411.00         | 29         | 2431.00         | 49         | 2451.00         | 69         | 2471.00         |
| 10         | 2412.00         | 30         | 2432.00         | 50         | 2452.00         | 70         | 2472.00         |
| 11         | 2413.00         | 31         | 2433.00         | 51         | 2453.00         | 71         | 2473.00         |
| 12         | 2414.00         | 32         | 2434.00         | 52         | 2454.00         | 72         | 2474.00         |
| 13         | 2415.00         | 33         | 2435.00         | 53         | 2455.00         | 73         | 2475.00         |
| 14         | 2416.00         | 34         | 2436.00         | 54         | 2456.00         | 74         | 2476.00         |
| 15         | 2417.00         | 35         | 2437.00         | 55         | 2457.00         | 75         | 2477.00         |
| 16         | 2418.00         | 36         | 2438.00         | 56         | 2458.00         | 76         | 2478.00         |
| 17         | 2419.00         | 37         | 2439.00         | 57         | 2459.00         | 77         | 2479.00         |
| 18         | 2420.00         | 38         | 2440.00         | 58         | 2460.00         | <b>78</b>  | <b>2480.00</b>  |
| 19         | 2421.00         | <b>39</b>  | <b>2441.00</b>  | 59         | 2461.00         | /          | /               |

**Table 4: RF Channel and Frequency of Bluetooth Low Energy**

| RF Channel | Frequency (MHz) | RF Channel | Frequency (MHz) | RF Channel | Frequency (MHz) | RF Channel | Frequency (MHz) |
|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 00         | 2402.00         | 10         | 2422.00         | 20         | 2442.00         | 30         | 2462.00         |
| 01         | 2404.00         | 11         | 2424.00         | 21         | 2444.00         | 31         | 2464.00         |
| 02         | 2406.00         | 12         | 2426.00         | 22         | 2446.00         | 32         | 2466.00         |
| 03         | 2408.00         | 13         | 2428.00         | 23         | 2448.00         | 33         | 2468.00         |
| 04         | 2410.00         | 14         | 2430.00         | 24         | 2450.00         | 34         | 2470.00         |
| 05         | 2412.00         | 15         | 2432.00         | 25         | 2452.00         | 35         | 2472.00         |
| 06         | 2414.00         | 16         | 2434.00         | 26         | 2454.00         | 36         | 2474.00         |
| 07         | 2416.00         | 17         | 2436.00         | 27         | 2456.00         | 37         | 2476.00         |
| 08         | 2418.00         | 18         | 2438.00         | 28         | 2458.00         | 38         | 2478.00         |
| 09         | 2420.00         | <b>19</b>  | <b>2440.00</b>  | 29         | 2460.00         | <b>39</b>  | <b>2480.00</b>  |

Test frequencies are lowest channel: 2402 MHz, middle channel: 2441/2440 MHz and highest channel: 2480 MHz.

**Table 5: Frequency Hopping Information**

| Technical Specification  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hopping Range            | Hereby we declare that the frequency range of this device is: 2402-2480MHz. This is according the Bluetooth Core Specification V5.4 (double mode) for devices which will be operated in the USA. This was checked during the Bluetooth Qualification tests (Test Case: TRM/CA/04-E).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Hopping Sequence         | Example of a 79 hopping sequence in data mode:<br><br>33,04,21,44,23,42,53,46,55,48,40,59,72,29,76,31,08,73,07,75,09,45,60,39,58,13,47,11,77,52,35,50,65,54,67,56,69,62,71,64, 7,25,27,66,57,70,74,61,78,63,10,41,05,43,15,44,64,68,02,70,06,01,51,03,55,05,03,66,53,49,36,47,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Receiver input bandwidth | <p>The input bandwidth of the receiver is 1MHz. In every connection one Bluetooth device is the master and the other one is the slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master.</p> <p>Additionally the type of connection is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings.</p> <p>Repeating of a packer has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case.</p> <p>That means a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.</p> |

### 3.3 Independent Operation Modes

The basic operation modes are:

- A. On
  - 1. Traditional Bluetooth (BR mode or EDR mode or BLE mode)
    - 1) Low Channel
    - 2) Middle Channel
    - 3) High Channel
- B. On, Traditional Bluetooth on Hopping channel
- C. On, Normal operation mode with Bluetooth connected
- D. Off

### 3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

### 3.5 Submitted Documents

- |                                  |                  |
|----------------------------------|------------------|
| - Application Form               | - Photo Document |
| - Block Diagram                  | - Schematics     |
| - FCC/IC Label and Location Info | - User Manual    |
| - Operation Description          |                  |

## 4 Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

**Radio Spectrum:** The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

**Emission:** The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

### 4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in C63.10-2020, ANSI C63.10-2020+Cor. 1-2023.

According to clause 3.1, all tests were performed on model ES 1203 in this report.

### 4.3 Special Accessories and Auxiliary Equipment

Table 6: List of Accessories and Auxiliary Equipment

| Description  | Manufacturer | Model | S/N             | Rating |
|--------------|--------------|-------|-----------------|--------|
| Notebook     | Lenovo       | T14   | PF-35VTG1       | N/A    |
| Mobile phone | Xiaomi       | Mi 11 | 29667/R2RK01332 | N/A    |

### 4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

## 4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

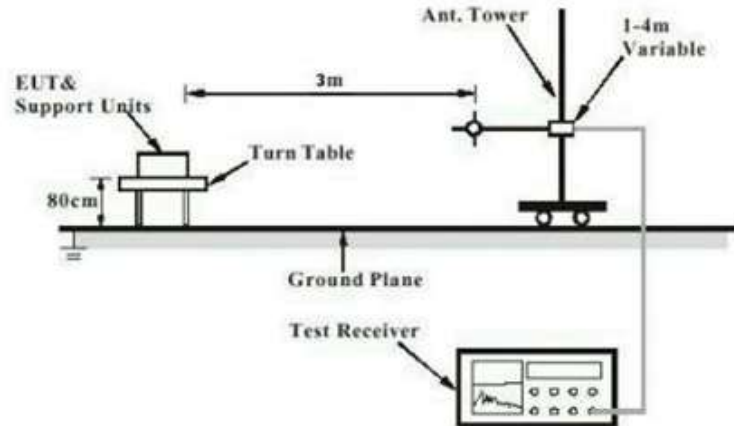


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

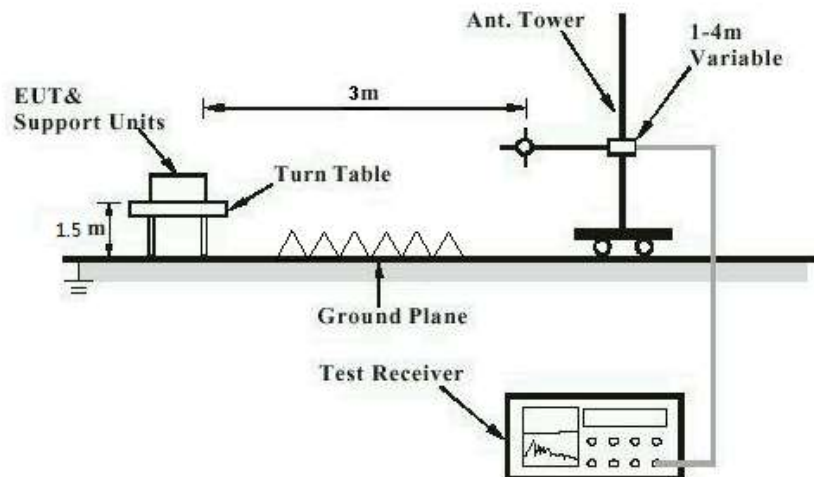


Diagram of Measurement Configuration for Mains Conduction Measurement

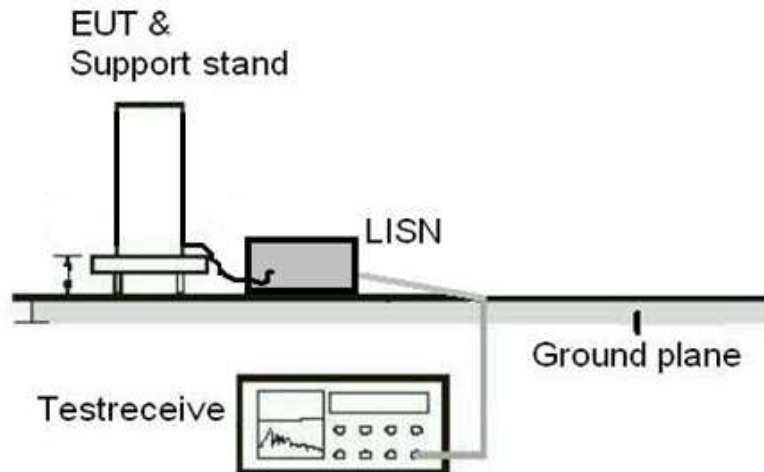


Diagram of Measurement Configuration for Conducted Transmitter Measurement



## 5 Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

**RESULT:** **Pass**

**Test Specification**

Test standard : FCC Part 15.247(b)(4) and Part 15.203  
RSS-Gen Clause 6.8

According to the manufacturer declared, the EUT has one internal antenna, the directional gain of antenna is 3.3dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

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### 5.1.2 Maximum Peak Conducted Output Power

RESULT:

Pass

**Test Specification**

|                   |                                                                 |
|-------------------|-----------------------------------------------------------------|
| Test standard     | : FCC Part 15.247(b)(1)&(3)<br>RSS-247 Clause 6.2.3.2 and 6.3.2 |
| Basic standard    | : C63.10-2020, ANSI C63.10-2020+Cor.1-2023                      |
| Limits            | : FHSS < 0.125 Watts                                            |
| Kind of test site | : Shielded Room                                                 |

**Test Setup**

|                      |                       |
|----------------------|-----------------------|
| Date of testing      | : 12.08.2025          |
| Input voltage        | : 120V/60Hz           |
| Operation mode       | : A                   |
| Test channel         | : Low / Middle / High |
| Ambient temperature  | : 24 °C               |
| Relative humidity    | : 50 %                |
| Atmospheric pressure | : 101 kPa             |

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

Note:

- 1) The cable loss has been taken into account in results.
- 2) Antenna gain(G): 3.3dBi,

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### 5.1.3 Conducted Power Spectral Density

RESULT:

Pass

**Test Specification**

|                   |                                              |
|-------------------|----------------------------------------------|
| Test standard     | : FCC Part 15.247(e)<br>RSS-247 Clause 6.3.1 |
| Basic standard    | : C63.10-2020, ANSI C63.10-2020+Cor.1-2023   |
| Kind of test site | : Shielded Room                              |

**Test Setup**

|                      |                       |
|----------------------|-----------------------|
| Date of testing      | : 12.08.2025          |
| Input voltage        | : 120V/60Hz           |
| Operation mode       | : A                   |
| Test channel         | : Low / Middle / High |
| Ambient temperature  | : 24 °C               |
| Relative humidity    | : 50 %                |
| Atmospheric pressure | : 101 kPa             |

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

### 5.1.4 6dB Bandwidth

**RESULT:****Pass****Test Specification**

|                   |                                            |
|-------------------|--------------------------------------------|
| Test standard     | : FCC Part 15.247(a)(2)                    |
| Basic standard    | : C63.10-2020, ANSI C63.10-2020+Cor.1-2023 |
| Limits            | : More than 500 KHz                        |
| Kind of test site | : Shielded Room                            |

**Test Setup**

|                      |                       |
|----------------------|-----------------------|
| Date of testing      | : 12.08.2025          |
| Input voltage        | : AC 120V 60Hz        |
| Operation mode       | : A                   |
| Test channel         | : Low / Middle / High |
| Ambient temperature  | : 24 °C               |
| Relative humidity    | : 50 %                |
| Atmospheric pressure | : 101 kPa             |

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

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### 5.1.5 99% Bandwidth

**RESULT:**

**Pass**

#### Test Specification

Test standard : RSS-Gen Clause 6.7  
Basic standard : C63.10-2020, ANSI C63.10-2020+Cor.1-2023  
Kind of test site : Shielded Room

#### Test Setup

Date of testing : 12.08.2025  
Input voltage : AC 120V 60Hz  
Operation mode : A  
Test channel : Low / Middle / High  
Ambient temperature : 24 °C  
Relative humidity : 50 %  
Atmospheric pressure : 101 kPa

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

**5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth****RESULT:****Pass****Test Specification**

|                   |                                                                                                                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test standard     | : FCC Part 15.247(d)<br>RSS-247 Clause 6.6                                                                                                                                                                                                                         |
| Basic standard    | : C63.10-2020, ANSI C63.10-2020+Cor.1-2023                                                                                                                                                                                                                         |
| Limits            | : 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power);<br>In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a) |
| Kind of test site | : Shielded Room                                                                                                                                                                                                                                                    |

**Test Setup**

|                      |                        |
|----------------------|------------------------|
| Date of testing      | : Refer to test result |
| Input voltage        | : 120V/60Hz            |
| Operation mode       | : A                    |
| Test channel         | : Low / Middle / High  |
| Ambient temperature  | : 24 °C                |
| Relative humidity    | : 50 %                 |
| Atmospheric pressure | : 101 kPa              |

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

### 5.1.7 Radiated Spurious Emission

**RESULT:****Pass****Test Specification**

Test standard : FCC Part 15.247(d) & FCC Part 15.205  
RSS-Gen Clause 8.9 and 8.10

Basic standard : C63.10-2020, ANSI C63.10-2020+Cor.1-2023

Limits : Refer to 15.209(a) of FCC part 15.247(d)  
RSS-Gen Issue 5 Table 5

Kind of test site : 3m Semi-anechoic Chamber

**Test Setup**

Date of testing : Refer to test result

Input voltage : 120V/60Hz

Operation mode : A

Test channel : Low / Middle / High

Ambient temperature : 22 °C

Relative humidity : 53 %

Atmospheric pressure : 101 kPa

**Remark:**

Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

### 5.1.8 20dB Bandwidth

**RESULT:**

**Pass**

**Test Specification**

Test standard : FCC Part 15.247(a)(1)  
RSS-247 Clause 6.2.1  
Basic standard : C63.10-2020, ANSI C63.10-2020+Cor.1-2023  
Kind of test site : Shielded Room

**Test Setup**

Date of testing : 12.08.2025  
Input voltage : 120V/60Hz  
Operation mode : A  
Test channel : Low / Middle / High  
Ambient temperature : 24 °C  
Relative humidity : 50 %  
Atmospheric pressure : 101 kPa

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

### 5.1.9 Carrier Frequency Separation

**RESULT:****Pass****Test Specification**

|                   |                                                                                 |
|-------------------|---------------------------------------------------------------------------------|
| Test standard     | : FCC Part 15.247(a)(1)<br>RSS-247 Clause 6.2.3.1                               |
| Basic standard    | : C63.10-2020, ANSI C63.10-2020+Cor.1-2023                                      |
| Limits            | : $\geq 25\text{kHz}$ or $2/3$ of $20\text{dB}$ bandwidth, whichever is greater |
| Kind of test site | : Shielded Room                                                                 |

**Test Setup**

|                      |                       |
|----------------------|-----------------------|
| Date of testing      | : 12.08.2025          |
| Input voltage        | : 120V/60Hz           |
| Operation mode       | : B                   |
| Test channel         | : Low / Middle / High |
| Ambient temperature  | : 24 °C               |
| Relative humidity    | : 50 %                |
| Atmospheric pressure | : 101 kPa             |

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

**5.1.10 Number of Hopping Frequency****RESULT:****Pass****Test Specification**

Test standard : FCC part 15.247(a)(1)(iii)  
RSS-247 Clause 6.2.3.1

Basic standard : C63.10-2020, ANSI C63.10-2020+Cor.1-2023

Limits :  $\geq 15$  non-overlapping channels

Kind of test site : Shielded Room

**Test Setup**

Date of testing : 12.08.2025

Input voltage : 120V/60Hz

Operation mode : B

Ambient temperature : 24 °C

Relative humidity : 50 %

Atmospheric pressure : 101 kPa

For details refer to following test result.

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

**Table 7: Test Result of Number of Hopping Frequency**

| Test Mode | Frequency Range | Measured Quantity of Hopping Channel | Limit     |
|-----------|-----------------|--------------------------------------|-----------|
| FHSS      | 2400-2483.5MHz  | 79                                   | $\geq 15$ |

### 5.1.11 Time of Occupancy

**RESULT:****Pass****Test Specification**

Test standard : FCC part 15.247(a)(1)(iii)  
RSS-247 Clause 6.2.3.1  
Basic standard : C63.10-2020, ANSI C63.10-2020+Cor.1-2023  
Limits : < 0.4s  
Kind of test site : Shielded Room

**Test Setup**

Date of testing : 12.08.2025  
Input voltage : 120V/60Hz  
Operation mode : B  
Test channel : Low / Middle / High  
Ambient temperature : 24 °C  
Relative humidity : 50 %  
Atmospheric pressure : 101 kPa

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

Note:

Dwell time = Pulse width x Number of channels in Period

Period = 0.4 (seconds/ channel) x 79 (channel) = 31.6 seconds

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Test Report No.Seite 27 von 29  
Page 27 of 29**5.1.12 Conducted Emission on AC Mains****RESULT:****Pass****Test Specification**

|                   |                                            |
|-------------------|--------------------------------------------|
| Test standard     | : FCC Part 15.207(a)<br>RSS-Gen Clause 8.8 |
| Basic standard    | : C63.10-2020, ANSI C63.10-2020+Cor.1-2023 |
| Frequency range   | : 0.15 – 30MHz                             |
| Limits            | : FCC Part 15.207(a)<br>RSS-Gen Table 4    |
| Kind of test site | : Shielded Room                            |

**Test Setup**

|                      |                        |
|----------------------|------------------------|
| Date of testing      | : Refer to test result |
| Input voltage        | : 120V/60Hz            |
| Operation mode       | : A                    |
| Earthing             | : Not connected        |
| Ambient temperature  | : 20 °C                |
| Relative humidity    | : 50 %                 |
| Atmospheric pressure | : 101 kPa              |

For the measurement records, refer to the Appendix 2. The test data in appendix 2 is the worst result after the EUTs were tested with all mode.

## 6 Safety Human Exposure

### 6.1 Radio Frequency Exposure Compliance

#### 6.1.1 Electromagnetic Fields

**RESULT:****Pass**

|                           |                                                                                                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Report No.</b>         | <b>CN25HTIW 001</b>                                                                                         |
| <b>Test Specification</b> |                                                                                                             |
| Test item                 | Entertainment System                                                                                        |
| Identification / Type No. | ES 1203                                                                                                     |
| FCC ID                    | 2ADDV-ES1203                                                                                                |
| IC                        | 12207-ES1203                                                                                                |
| HVIN                      | ES 1203                                                                                                     |
| Test standard             | CFR47 FCC Part 2: Section 2.1093<br>FCC KDB Publication 447498 D01 v06<br>RSS-102 Issue 6 December 15, 2023 |

**Measurement Record:**

The minimum distance for the EUT is less than 5mm.

**For FCC:**

Since maximum peak output power of the transmitter is  $-8.06 \text{ dBm} \approx 0.156 \text{ mW} < \frac{3 \cdot d}{\sqrt{f}} = 9.68 \text{ mW}$ .

Hence the EUT is excluded from SAR evaluation according to FCC KDB Publication 447498 D01 General RF Exposure Guidance v06.

**For IC:**

The higher of the maximum e.i.r.p. or conducted power of the transmitter is  $-4.76 \text{ dBm} \approx 0.334 \text{ mW}$ , which is below the SAR exclusion threshold level  $3 \text{ mW} \approx 4.77 \text{ dBm}$ .

Hence the EUT is exempted from routine evaluation limits (SAR Evaluation) according to clause 6.3 of RSS-102 Issue 6.

## 7 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the Appendix 1.

## 8 List of Tables

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