**Prüfbericht - Produkte**
*Test Report - Products*

TÜVRheinland®

| | | | | |
|---|---|---|---|---|
| **Prüfbericht-Nr.:** *Test report no.:* | **CN2387AY 002** | **Auftrags-Nr.:** *Order no.:* | **168405109** | **Seite 1 von 26** *Page 1 of 26* |
| **Kunden-Referenz-Nr.:** *Client reference no.:* | N/A | **Auftragsdatum:** *Order date:* | 2023-01-04 | |
| **Auftraggeber:** *Client:* | **Hillsdale Technology LLC** 3182 Campus Drive, Unit 266, San Mateo, United States | | | |
| **Prüfgegenstand:** *Test item:* | Jarvisen Translator 2 | | | |
| **Bezeichnung / Typ-Nr.:** *Identification / Type no.:* | JT-2-BLACK | | | |
| **Auftrags-Inhalt:** *Order content:* | Test Report | | | |
| **Prüfgrundlage:** *Test specification:* | CFR47 FCC Part 15: Subpart C Section 15.247 | | | |

| | | |
|---|---|---|
| **Wareneingangsdatum:** *Date of sample receipt:* | 2023-01-06 | Please refer to Photo Document |
| **Prüfmuster-Nr.:** *Test sample no:* | A003399272-001~008<br>A003399272-017~026 | |
| **Prüfzeitraum:** *Testing period:* | 2023-01-29 - 2023-02-10 | |
| **Ort der Prüfung:** *Place of testing:* | TÜV Rheinland (Shenzhen) Co., Ltd. | |
| **Prüflaboratorium:** *Testing laboratory:* | TÜV Rheinland (Shenzhen) Co., Ltd. | |
| **Prüfergebnis*:** *Test result*:* | Pass | |

| | | | |
|---|---|---|---|
| **geprüft von:** *tested by:* | Lin Lin | **genehmigt von:** *authorized by:* | Hardy Suo |
| **Datum:** *Date:* 2023-02-16 | | **Ausstellungsdatum:** *Issue date:* 2023-02-16 | |
| **Stellung** / *Position:* | Senior Project Manager | **Stellung** / *Position:* | Reviewer |

**Sonstiges** / *Other:* FCC ID: 2A94T-JT-2-BLACK
This report is for Bluetooth wireless only.

**Zustand des Prüfgegenstandes bei Anlieferung:** Prüfmuster vollständig und unbeschädigt
*Condition of the test item at delivery:* *Test item complete and undamaged*

| | | | | | |
|---|---|---|---|---|---|
| * Legende: | 1 = sehr gut | 2 = gut | 3 = befriedigend | 4 = ausreichend | 5 = mangelhaft |
| | P(ass) = entspricht o.g. Prüfgrundlage(n) | | F(ail) = entspricht nicht o.g. Prüfgrundlage(n) | N/A = nicht anwendbar | N/T = nicht getestet |
| ** Legend:* | *1 = very good* | *2 = good* | *3 = satisfactory* | *4 = sufficient* | *5 = poor* |
| | *P(ass) = passed a.m. test specification(s)* | | *F(ail) = failed a.m. test specification(s)* | *N/A = not applicable* | *N/T = not tested* |

**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.**
*This test report only relates to the a. m. 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.*
V05

# *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 20DB BANDWIDTH**
*RESULT: Pass*

**5.1.7 CARRIER FREQUENCY SEPARATION**
*RESULT: Pass*

**5.1.8 NUMBER OF HOPPING FREQUENCY**
*RESULT: Pass*

**5.1.9 TIME OF OCCUPANCY**
*RESULT: Pass*

**5.1.10 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHZ BANDWIDTH**
*RESULT: Pass*

**5.1.11 RADIATED SPURIOUS EMISSION**
*RESULT: Pass*

**5.1.12 CONDUCTED EMISSION**
*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 A: Test Results of Bluetooth BR/EDR

Appendix B: Test Results of Bluetooth Low Energy

Appendix C: Photographs of the Test Set-up

# 2 Test Sites

## 2.1 Test Facilities

**TÜV Rheinland (Shenzhen) Co., Ltd.**
No. 362 Huanguan Road Middle, Longhua District, 518110, Shenzhen, P. R. China.

FCC Accreditation Designation No.: CN1260

## 2.2 List of Test and Measurement Instruments

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

| **Radio Spectrum Testing (SRD-Tonscend)** | | | | |
|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model** | **Serial No.** | **Cal. until** |
| EXA Signal Analyzer, Multi-touch | Keysight | N9010B | MY60241175 | 2023-10-10 |
| MXG X-Series RF Vector Signal Generator | Keysight | N5182B | MY61250137 | 2023-10-10 |
| EXG X-Series Microwave Analog Signal Generator | Keysight | N5173B | MY61250141 | 2023-10-10 |
| DC power supply | Keysight | E3642A | MY61276100 | 2023-10-10 |
| Power Control Unit | Tonscend | JS0806-4ADC | N/A | 2023-10-10 |
| Automation Control Unit | Tonscend | JS0806-2 | 21C8060396 | 2023-10-10 |
| Test Software | Tonscend | JS1120-3 | N/A | N/A |
| Control PC | Lenovo | TianYi510S-071MB | YLX23JMF | N/A |
| Shielding Room 8# | Albatross | SR8 | APC17151-SR8 | 2024-06-22 |
| **Unwanted Emission Testing (TS9975)** | | | | |
| **Equipment** | **Manufacturer** | **Model** | **Serial No.** | **Cal. until** |
| EMI Test Receiver | R&S | ESR 7 | 102021 | 2023-08-02 |
| Signal Analyzer | R&S | FSV 40 | 101439 | 2023-08-01 |
| System Controller Interface | R&S | SCI-100 | S10010038 | N/A |
| Filterbank | R&S | Wlan | 100759 | 2023-08-01 |
| OSP | R&S | OSP 120 | 102040 | N/A |
| Pre-amplifier | R&S | SCU08F1 | 08320031 | 2023-08-02 |
| Amplifier | R&S | SCU-18F | 180070 | 2023-08-02 |
| Amplifier | R&S | SCU40A | 100475 | 2023-08-02 |
| Trilog Broadband Antenna (30 MHz - 7 GHz) | Schwarzbeck | VULB 9162 | 193 | 2024-08-06 |
| Double-Ridged Antenna (1 -18 GHz) | ETS-LINDGREN | 3117 | 00218717 | 2024-08-06 |
| Wideband Ridged Horn Antenna (18-40 GHz) | Steatite | QMS-00880 | 19067 | 2024-08-27 |
| Active Loop Antenna | Schwarzbeck | FMZB 1513 | 302 | 2023-08-06 |
| Test software | R&S | EMC32 (V10.60.10) | N/A | N/A |
| Control PC | Dell | OptiPlex 7050 | 36NV9P2 | N/A |
| 3m Semi-Anechoic Chamber | Albatross | SAC-3m | APC17151-SAC | 2024-06-22 |

| Conducted Emission | | | | |
|---|---|---|---|---|
| **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Cal. Until** |
| EMI Test Receiver | R&S | ESR3 | 102680 | 2023-02-27 |
| Artificial Mains Network | R&S | ENV216 | 101445 | 2023-02-27 |
| EMC32 test software | R&S | EMC32(Ver.10.50.00) | N/A | N/A |

## 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 basics 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 A & B & C 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 No. 362 Huanguan Road Middle, Longhua District, 518110, Shenzhen, P. R. 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 EUT is a Jarvisen Translator 2 which supports Bluetooth (dual mode), 2.4GHz Wi-Fi, 5GHz Wi-Fi, WCDMA and LTE functions.

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 |
|---|---|
| Product Name: | Jarvisen Translator 2 |
| Model No.: | JT-2-BLACK |
| FCC ID: | 2A94T-JT-2-BLACK |
| Operating Voltage: | Internal battery operated (3.85Vdc, 2000mAh)<br>or USB operated (Adapter input voltage 120Vac, 60Hz) |
| Testing Voltage: | AC 120V, 60Hz or Fully charged battery |
| Operating Temperature Range: | -10 °C ~ 45 °C |
| AC/DC Adapter: | Model: ES019C-U120150XYC<br>Input: 100-240V, 50/60Hz<br>Output: 9V/3A or 9V/2A or 12V/1.5A |
| Battery: | Model: LD200A<br>Rated Capacity: 3.85V, 2000mAh, 7.7Wh |
| HW Version: | HW_LD_MB_V01 |
| SW Version: | 1600 |
| **Technical Specification of Bluetooth (dual mode)** | |
| Operating Frequency: | 2402 MHz to 2480 MHz |
| Type of Modulation: | GFSK, π/4-DQPSK, 8DPSK |
| Channel Number: | BR & EDR mode:79 channels, Low Energy mode:40 channels |
| Channel Separation: | BR & EDR mode:1MHz, Low Energy mode:2MHz |
| Data Rate: | BR & EDR mode:( 1Mbps, 3Mbps)<br>Low Energy mode: (1Mbps, 2Mbps) |
| Antenna Type: | Internal Antenna |
| Antenna Gain of Bluetooth: | 1.65 dBi |

**Table 3: RF Channel and Frequency of Bluetooth BR/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 | 78 | **2480.00** |
| 19 | 2421.00 | 39 | **2441.00** | 59 | 2461.00 | | |

Test frequencies are lowest channel: 2402 MHz, middle channel: 2441 MHz and highest channel: 2480 MHz for Bluetooth BR/EDR

**Table 4: RF Channel and Frequency of Bluetooth LE**

| RF Channel | Frequency (MHz) | RF Channel | Frequency (MHz) | RF Channel | Frequency (MHz) | RF Channel | Frequency (MHz) |
|---|---|---|---|---|---|---|---|
| **0** | **2402** | 10 | 2422 | 20 | 2442 | 30 | 2462 |
| 1 | 2404 | 11 | 2424 | 21 | 2444 | 31 | 2464 |
| 2 | 2406 | 12 | 2426 | 22 | 2446 | 32 | 2466 |
| 3 | 2408 | 13 | 2428 | 23 | 2448 | 33 | 2468 |
| 4 | 2410 | 14 | 2430 | 24 | 2450 | 34 | 2470 |
| 5 | 2412 | 15 | 2432 | 25 | 2452 | 35 | 2472 |
| 6 | 2414 | 16 | 2434 | 26 | 2454 | 36 | 2474 |
| 7 | 2416 | 17 | 2436 | 27 | 2456 | 37 | 2476 |
| 8 | 2418 | 18 | 2438 | 28 | 2458 | 38 | 2478 |
| 9 | 2420 | **19** | **2440** | 29 | 2460 | **39** | **2480** |

Test frequencies are lowest channel: 2402 MHz, middle channel: 2440 MHz and highest channel: 2480 MHz for Bluetooth LE

## 3.3 Independent Operation Modes

The basic operation modes are:

A. On, Bluetooth transmitting mode (BR & EDR mode)
   1) Low Channel
   2) Middle Channel
   3) High Channel

B. On, Bluetooth transmitting mode (Bluetooth LE mode)
   1) Low Channel
   2) Middle Channel
   3) High Channel

C. On, Transmitting on Hopping channel

D. On, Normal operation +Bluetooth

E. Off

## 3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

## 3.5 Submitted Documents

- Application Form
- Operation Description
- PCB Layout
- User Manual
- Block Diagram
- ID Label and Location Info

# 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 ANSI C63.10: 2013.

According to clause 3.1, all tests were performed on model JT-2-BLACK in this report.

## 4.3 Special Accessories and Auxiliary Equipment

**Table 5: Auxiliary Equipment Used during Test**

| Description | Manufacturer | Model | S/N |
|---|---|---|---|
| Portable Laptop | Lenovo | ThinkPad L470 | SPP0M92508 |
| Mobile phone | HUAWEI | STK-AL00 | 7PRNW20721000279 |

## 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)**

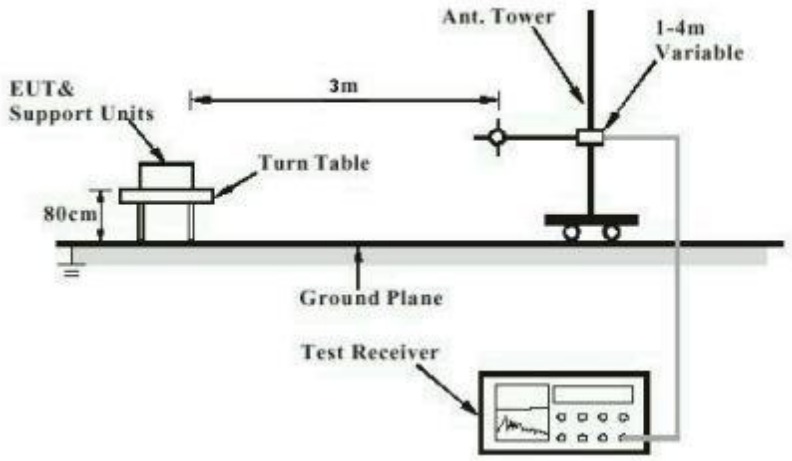



**Diagram of Measurement Configuration for Radiation Test (Above 1GHz)**

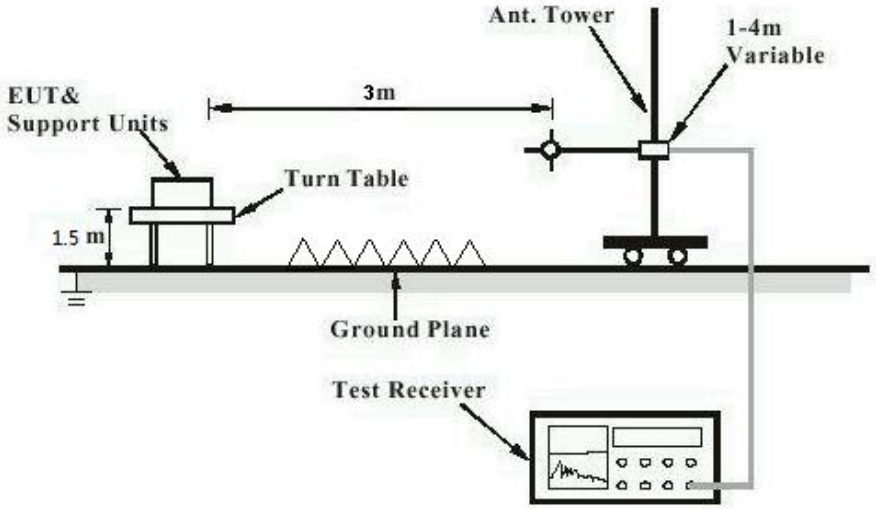


**Diagram of Measurement Configuration for Mains Conduction Measurement**

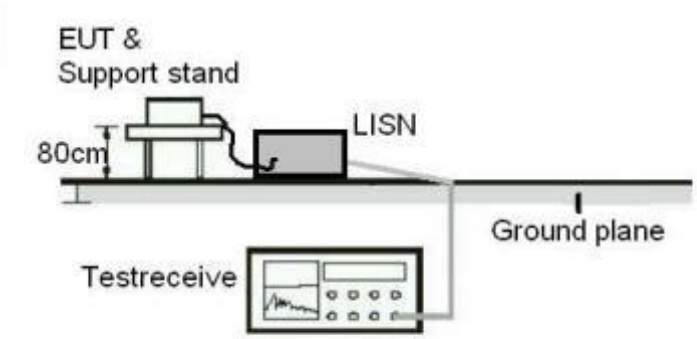
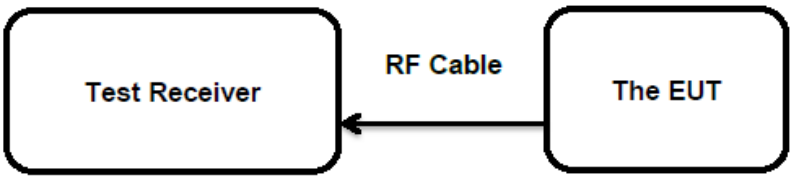



**Diagram of Measurement Configuration for Conducted Transmitter Measurement**



# 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

According to the manufacturer declared, the EUT has an Integral antenna, the directional gain of antenna is 1.65 dBi, 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.

Refer to EUT Photo for further details.

## 5.1.2 Maximum Peak Conducted Output Power

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC Part 15.247(b)(1)&(3) |
| Basic standard | : | ANSI C63.10: 2013 |
| Limits | : | FHSS < 0.125 Watts, DSSS < 1.0 Watts |
| Kind of test site | : | Shielded Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 2023-02-03 to 2023-02-10 |
| Input voltage | : | Fully charged battery |
| Operation mode | : | A, B |
| Test channel | : | Low / Middle / High |
| Ambient temperature | : | 24.3 ℃ |
| Relative humidity | : | 45 % |
| Atmospheric pressure | : | 101 kPa |

For details refer to following test result.

**Table 6: Test Result of Maximum Peak Conducted Output Power, Bluetooth BR & EDR**

| Test Mode | Test Channel (MHz) | Measured Peak Power | | Limit (W) |
|---|---|---|---|---|
| | | (dBm) | (W) | |
| GFSK (BR) | 2402.0 | 5.23 | 0.0033 | < 0.125 |
| | 2441.0 | 5.12 | 0.0033 | |
| | 2480.0 | 4.95 | 0.0031 | |
| **Maximum Measured Value** | | 5.23 | 0.0033 | |

| Test Mode | Test Channel (MHz) | Measured Peak Power | | Limit (W) |
|---|---|---|---|---|
| | | (dBm) | (W) | |
| 8DPSK (EDR) | 2402.0 | 4.03 | 0.0025 | < 0.125 |
| | 2441.0 | 4.24 | 0.0027 | |
| | 2480.0 | 4.21 | 0.0026 | |
| **Maximum Measured Value** | | 4.24 | 0.0027 | |

**Table 7: Test Result of Maximum Peak Conducted Output Power, Bluetooth LE**

| Test Mode | Test Channel (MHz) | Measured Peak Power | | Limit (W) |
|---|---|---|---|---|
| | | (dBm) | (W) | |
| Bluetooth LE (1 Mbps) | 2402 | -1.39 | 0.0007 | < 1.0 |
| | 2440 | -1.30 | 0.0007 | |
| | 2480 | -1.72 | 0.0007 | |
| **Max. Measured Value** | | -1.30 | 0.0007 | |

| Test Mode | Test Channel (MHz) | Measured Peak Power | | Limit (W) |
|---|---|---|---|---|
| | | (dBm) | (W) | |
| Bluetooth LE (2 Mbps) | 2402 | -1.40 | 0.0007 | < 1.0 |
| | 2440 | -1.48 | 0.0007 | |
| | 2480 | -1.84 | 0.0007 | |
| **Max. Measured Value** | | -1.40 | 0.0007 | |

Note:

1) The cable loss is taken into account in results.
2) Antenna gain(G): 1.65 dBi

## 5.1.3 Conducted Power Spectral Density

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC Part 15.247(e) |
| Basic standard | : | ANSI C63.10: 2013 |
| Limits | : | < 8 dBm / 3kHz |
| Kind of test site | : | Shielded Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 2023-02-07 |
| Input voltage | : | Fully charged battery |
| Operation mode | : | B |
| Test channel | : | Low / Middle / High |
| Ambient temperature | : | 24.3 ℃ |
| Relative humidity | : | 45 % |
| Atmospheric pressure | : | 101 kPa |

For the measurement records, refer to the appendix B.

## 5.1.4 6dB Bandwidth

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC Part 15.247(a)(2) |
| Basic standard | : | ANSI C63.10: 2013 |
| Limits | : | > 500 kHz |
| Kind of test site | : | Shielded Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 2023-02-07 |
| Input voltage | : | Fully charged battery |
| Operation mode | : | B |
| Test channel | : | Low / Middle / High |
| Ambient temperature | : | 24.3 ℃ |
| Relative humidity | : | 45 % |
| Atmospheric pressure | : | 101 kPa |

For the measurement records, refer to the appendix B.

## 5.1.5 99% Bandwidth

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC Part 15.247(a) |
| Basic standard | : | ANSI C63.10: 2013 |
| Kind of test site | : | Shielded Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 2023-02-03 to 2023-02-10 |
| Input voltage | : | Fully charged battery |
| Operation mode | : | A, B |
| Test channel | : | Low / Middle / High |
| Ambient temperature | : | 24.3 ℃ |
| Relative humidity | : | 45 % |
| Atmospheric pressure | : | 101 kPa |

For the measurement records, refer to the appendix A & B.

## 5.1.6 20dB Bandwidth

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC Part 15.247(a)(1) |
| Basic standard | : | ANSI C63.10: 2013 |
| Kind of test site | : | Shielded Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 2023-02-03 to 2023-02-10 |
| Input voltage | : | Fully charged battery |
| Operation mode | : | A |
| Test channel | : | Low / Middle / High |
| Ambient temperature | : | 24.3 ℃ |
| Relative humidity | : | 45 % |
| Atmospheric pressure | : | 101 kPa |

For the measurement records, refer to the appendix A.

## 5.1.7 Carrier Frequency Separation

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC Part 15.247(a)(1) |
| Basic standard | : | ANSI C63.10: 2013 |
| Limits | : | ≥ 25kHz or 2/3 of 20dB bandwidth, whichever is greater |
| Kind of test site | : | Shielded Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 2023-02-03 to 2023-02-10 |
| Input voltage | : | Fully charged battery |
| Operation mode | : | C |
| Test channel | : | Low / Middle / High |
| Ambient temperature | : | 24.3 ℃ |
| Relative humidity | : | 45 % |
| Atmospheric pressure | : | 101 kPa |

For the measurement records, refer to the appendix A.

## 5.1.8 Number of Hopping Frequency

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC part 15.247(a)(1)(iii) |
| Basic standard | : | ANSI C63.10: 2013 |
| Limits | : | ≥ 15 non-overlapping channels |
| Kind of test site | : | Shielded Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 2023-02-03 to 2023-02-10 |
| Input voltage | : | Fully charged battery |
| Operation mode | : | C |
| Ambient temperature | : | 24.3 ℃ |
| Relative humidity | : | 45 % |
| Atmospheric pressure | : | 101 kPa |

For the measurement records, refer to the appendix A.

## 5.1.9 Time of Occupancy

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC part 15.247(a)(1)(iii) |
| Basic standard | : | ANSI C63.10: 2013 |
| Limits | : | < 0.4s |
| Kind of test site | : | Shielded Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 2023-02-03 to 2023-02-10 |
| Input voltage | : | Fully charged battery |
| Operation mode | : | C |
| Test channel | : | Low / Middle / High |
| Ambient temperature | : | 24.3 ℃ |
| Relative humidity | : | 45 % |
| Atmospheric pressure | : | 101 kPa |

For the measurement records, refer to the appendix A.

## 5.1.10 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC Part 15.247(d) |
| Basic standard | : | ANSI C63.10: 2013 |
| 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 | : | 2023-02-03 to 2023-02-10 |
| Input voltage | : | Fully charged battery |
| Operation mode | : | A, B |
| Test channel | : | Low / Middle / High |
| Ambient temperature | : | 24.3 ℃ |
| Relative humidity | : | 45 % |
| 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 A & B.

## 5.1.11 Radiated Spurious Emission

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC Part 15.247(d) & FCC Part 15.205 |
| Basic standard | : | ANSI C63.10: 2013 |
| Limits | : | Refer to 15.209(a) of FCC part 15.247(d) |
| Kind of test site | : | 3m Semi-anechoic Chamber |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 2023-01-30 to 2023-02-01 |
| Input voltage | : | Fully charged battery |
| Operation mode | : | A, B |
| Test channel | : | Low / Middle / High |
| Ambient temperature | : | Refer to test result |
| Relative humidity | : | Refer to test result |
| 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 A & B.

## 5.1.12 Conducted Emission

**RESULT:** **Pass**

**Test Specification**

| | | |
|---|---|---|
| Test standard | : | FCC Part 15.207(a) |
| Basic standard | : | ANSI C63.10: 2013 |
| Frequency range | : | 0.15 – 30MHz |
| Limits | : | FCC Part 15.207(a) |
| Kind of test site | : | Shielded Room |

**Test Setup**

| | | |
|---|---|---|
| Date of testing | : | 2023-02-02 |
| Input voltage | : | AC 120V, 60Hz |
| Operation mode | : | D |
| Earthing | : | Not connected |
| Ambient temperature | : | 23.2 ℃ |
| Relative humidity | : | 50.6 % |
| Atmospheric pressure | : | 101 kPa |

For the measurement records, refer to the appendix B.

# 6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix C.

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