

|                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                      |                                                                                    |                                          |                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Prüfbericht-Nr.:</b><br>Test report no.:                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>CN21OZR9 001</b>                                                                                                                                  | <b>Auftrags-Nr.:</b><br>Order no.:                                                 | <b>168346070</b>                         | <b>Seite 1 von 23</b><br>Page 1 of 23                                                 |
| <b>Kunden-Referenz-Nr.:</b><br>Client reference no.:                                                                                                                                                                                                                                                                                                                                                                                                        | <b>N/A</b>                                                                                                                                           | <b>Auftragsdatum:</b><br>Order date:                                               | <b>2021-12-06</b>                        |                                                                                       |
| <b>Auftraggeber:</b><br>Client:                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Tymphany Acoustic Technology HK Limited</b><br>RM.1521,15/F. ,BLOCK A,HI-TECH INDUSTRIAL CENTRE,5-21 PAK TIN PAR STREET,TSUEN WAN,N.T. ,HONG KONG |                                                                                    |                                          |                                                                                       |
| <b>Prüfgegenstand:</b><br>Test item:                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>M18/M12 Wireless Jobsite Speaker</b>                                                                                                              |                                                                                    |                                          |                                                                                       |
| <b>Bezeichnung / Typ-Nr.:</b><br>Identification / Type no.:                                                                                                                                                                                                                                                                                                                                                                                                 | 2891-20<br>(Trademark:  )                                           |                                                                                    |                                          |                                                                                       |
| <b>Auftrags-Inhalt:</b><br>Order content:                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Test Report</b>                                                                                                                                   |                                                                                    |                                          |                                                                                       |
| <b>Prüfgrundlage:</b><br>Test specification:                                                                                                                                                                                                                                                                                                                                                                                                                | <b>CFR47 FCC Part 15: Subpart C Section 15.247</b>                                                                                                   |                                                                                    |                                          |                                                                                       |
| <b>Wareneingangsdatum:</b><br>Date of sample receipt:                                                                                                                                                                                                                                                                                                                                                                                                       | <b>2021-11-16</b>                                                                                                                                    | <b>See EUT photo document</b>                                                      |                                          |                                                                                       |
| <b>Prüfmuster-Nr.:</b><br>Test sample no:                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>HS211114-001-002</b><br><b>HS211114-001-003</b>                                                                                                   |                                                                                    |                                          |                                                                                       |
| <b>Prüfzeitraum:</b><br>Testing period:                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>2021-11-17 - 2021-11-29</b>                                                                                                                       |                                                                                    |                                          |                                                                                       |
| <b>Ort der Prüfung:</b><br>Place of testing:                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Hwa-Hsing (Dongguan) Testing Co., Ltd.</b>                                                                                                        |                                                                                    |                                          |                                                                                       |
| <b>Prüflaboratorium:</b><br>Testing laboratory:                                                                                                                                                                                                                                                                                                                                                                                                             | <b>TÜV Rheinland (Shenzhen) Co., Ltd.</b>                                                                                                            |                                                                                    |                                          |                                                                                       |
| <b>Prüfergebnis*:</b><br>Test result*:                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Pass</b>                                                                                                                                          |                                                                                    |                                          |                                                                                       |
| <b>geprüft von:</b><br>tested by:                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                   |                                                                                    | <b>genehmigt von:</b><br>authorized by:  |  |
| <b>Datum:</b><br>Date:                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>2022-01-14</b><br><small>Signed by: Chris Chen</small>                                                                                            |                                                                                    | <b>Ausstellungsdatum:</b><br>Issue date: | <b>2022-01-14</b><br><small>Signed by: Lin Lin</small>                                |
| <b>Stellung / Position:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Section Manager</b>                                                                                                                               |                                                                                    | <b>Stellung / Position:</b>              | <b>Reviewer</b>                                                                       |
| <b>Sonstiges / Other:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>FCC ID: 2A3U52891-20</b>                                                                                                                          |                                                                                    |                                          |                                                                                       |
| <b>Zustand des Prüfgegenstandes bei Anlieferung:</b><br>Condition of the test item at delivery:                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                      | <b>Prüfmuster vollständig und unbeschädigt</b><br>Test item complete and undamaged |                                          |                                                                                       |
| <p>* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft<br/>P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet</p> <p>* Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor<br/>P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested</p>            |                                                                                                                                                      |                                                                                    |                                          |                                                                                       |
| <p><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/>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.</p> |                                                                                                                                                      |                                                                                    |                                          |                                                                                       |

## ***Test Summary***

**5.1.1 ANTENNA REQUIREMENT**

RESULT: Pass

**5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER**

RESULT: Pass

**5.1.3 99% BANDWIDTH**

RESULT: Pass

**5.1.4 20dB BANDWIDTH**

RESULT: Pass

**5.1.5 CARRIER FREQUENCY SEPARATION**

RESULT: Pass

**5.1.6 NUMBER OF HOPPING FREQUENCY**

RESULT: Pass

**5.1.7 TIME OF OCCUPANCY**

RESULT: Pass

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

RESULT: Pass

**5.1.9 RADIATED SPURIOUS EMISSION**

RESULT: Pass

**5.1.10 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: Photographs of the Test Set-up

Appendix B: Test Results of Bluetooth BR/EDR mode

# 2 Test Sites

## 2.1 Test Facilities

**Hwa-Hsing (Dongguan) Testing Co., Ltd.**

No.101, Bld N1, Yuyuan 2Rd, Yuyuan Industrial Park, HuangJiang Town, Dongguan, China

FCC Registration No.: 915896

Note: The tests at the test site have been conducted under the supervision of a TÜV engineer.

## 2.2 List of Test and Measurement Instruments

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

| <b>Radiated emission below 30MHz:</b> |                     |                  |                    |                   |
|---------------------------------------|---------------------|------------------|--------------------|-------------------|
| <b>Equipment</b>                      | <b>Manufacturer</b> | <b>Model</b>     | <b>Serial No.</b>  | <b>Cal. until</b> |
| EMI Test Receiver                     | Rohde&Schwarz       | ESCI 7           | 100962             | 2022/01/05        |
| 3m Semi-anechoic Chamber              | MAORUI              | 9m*6m*6m         | NSEMC003           | 2022/04/14        |
| Test software                         | FARAD               | FARAD            | EZ_EMCV1.1.4.<br>2 | N/A               |
| Loop Antenna                          | EMCI                | HLA 6121         | 45745              | 2022/04/13        |
| Preamplifier                          | EMCI                | EMC001340        | 980201             | 2022/09/12        |
| <b>Frequency Range below 1GHz:</b>    |                     |                  |                    |                   |
| <b>Equipment</b>                      | <b>Manufacturer</b> | <b>Model</b>     | <b>Serial No.</b>  | <b>Cal. until</b> |
| EMI Test Receiver                     | Rohde&Schwarz       | ESCI 7           | 100962             | 2022/01/05        |
| Broadband antenna                     | Schwarzbeck         | VULB 9168        | 00937              | 2022/04/15        |
| Signal Amplifier                      | Com-power           | PAM-103          | 18020051           | 2022/03/14        |
| Attenuator                            | Rohde&Schwarz       | TS2GA-6dB        | 18101101           | N/A               |
| Test software                         | FARAD               | FARAD            | EZ_EMCV1.1.4.<br>2 | N/A               |
| <b>Frequency Range 1-18GHz:</b>       |                     |                  |                    |                   |
| <b>Equipment</b>                      | <b>Manufacturer</b> | <b>Model</b>     | <b>Serial No.</b>  | <b>Cal. until</b> |
| Horn Antenna                          | Schwarzbeck         | BBHA 9170        | 01959              | 2022/04/15        |
| Broadband Coaxial Preamplifier        | Schwarzbeck         | BBV 9718         | 00025              | 2022/03/14        |
| Spectrum                              | Keysight            | N9020A           | MY51240612         | 2022/09/12        |
| <b>AC Line Conducted Emission</b>     |                     |                  |                    |                   |
| <b>Equipment</b>                      | <b>Manufacturer</b> | <b>Model No.</b> | <b>Serial No.</b>  | <b>Cal. Until</b> |
| EMI Test Receiver                     | R&S                 | ESR3             | 102680             | 2022/09/12        |
| Artificial Mains Network              | R&S                 | ENV216           | 101445             | 2022/09/12        |
| Test software                         | FARAD               | EZ EMC           | N/A                | N/A               |
| <b>RF Conducted test system</b>       |                     |                  |                    |                   |
| <b>Equipment</b>                      | <b>Manufacturer</b> | <b>Model No.</b> | <b>Serial No.</b>  | <b>Cal. Until</b> |
| Spectrum                              | Keysight            | N9020A           | MY51240612         | 2022/09/12        |
| Spectrum Analyzer                     | Rohde&Schwarz       | FSV-40N          | 101783             | 2022/09/12        |
| Power Meter 10Hz~18GHz                | Tonscend            | JS0806-2         | 188060126          | 2022/09/12        |
| Signal generator                      | Keysight            | E4421B           | GB40051020         | 2022/09/12        |
| Signal generator                      | Keysight            | N5182A           | MY47420944         | 2022/09/12        |
| Test Software                         | Tonscend            | JS0806-2         | NA                 | NA                |

## 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            |
|--------------------------------------------------------|------------------------|
| Radio Frequency                                        | $\pm 1 \times 10^{-7}$ |
| RF Power (conducted)                                   | $\pm 2.5$ dB           |
| Radiated Emission of Transmitter, valid up to 26.5 GHz | $\pm 6$ dB             |
| Radiated Emission of Receiver, valid up to 26.5 GHz    | $\pm 6$ dB             |
| Conducted Emission, (9kHz to 150kHz)/(150kHz to 30MHz) | $\pm 2.66$ dB          |
| Temperature                                            | $\pm 1$ °C             |
| Humidity                                               | $\pm 5$ %              |
| Voltage (DC)                                           | $\pm 1$ %              |
| Voltage (AC, <10kHz)                                   | $\pm 2$ %              |

## 2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B 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 **Hwa-Hsing (Dongguan) Testing Co., Ltd.** Test facility located at No.101, Bld N1, Yuyuan 2Rd, Yuyuan Industrial Park, HuangJiang Town, Dongguan, 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 **M18/M12 Wireless Jobsite Speaker**, which supports Bluetooth BR&EDR wireless technology.

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:                          | M18/M12 Wireless Jobsite Speaker                                                    |
| Type Designation:                           | 2891-20                                                                             |
| Trademark:                                  |  |
| FCC ID:                                     | 2A3U52891-20                                                                        |
| Testing Voltage:                            | DC 18V From Adapter input 120VAC, 60Hz; or<br>DC 18V from Battery                   |
| Adapter                                     | Model: E054-1A180300HU<br>Input: 100-240V~, 50/60Hz, 1.5A<br>Output: DC18V, 3.0A    |
| Antenna Type:                               | PCB Layout Antenna                                                                  |
| Antenna Gain:                               | 4.26 dBi                                                                            |
| Technical Specification of Bluetooth BR/EDR |                                                                                     |
| Operating Frequency:                        | 2402 MHz to 2480 MHz                                                                |
| Type of Modulation:                         | GFSK(BR), $\pi/4$ -DQPSK(EDR), 8DPSK(EDR)                                           |
| Channel Number:                             | 79 channels                                                                         |
| Channel Separation:                         | 1MHz                                                                                |

**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) |
|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| <b>0</b>   | <b>2402.00</b>  | 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         | <b>2480.00</b>  |
| 19         | 2421.00         | 39         | <b>2441.00</b>  | 59         | 2461.00         |            |                 |

Test frequencies are lowest channel: 2402 MHz, middle channel: 2441 MHz and highest channel: 2480 MHz for General 2.4GHz



### 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, Transmitting on Hopping channel

C. On, Normal Operation(BT Link)

D. Off

### 3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

### 3.5 Submitted Documents

- Application Form

- Operation Description

- Schematics

- PCB Layout

- User Manual

- Block Diagram

- Rating Label

- Parts List

## 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 2891-20 in this report.

### 4.3 Special Accessories and Auxiliary Equipment

Table 4: Auxiliary Equipment Used during Test

| Description  | Manufacturer | Model             | S/N        |
|--------------|--------------|-------------------|------------|
| Laptop       | Lenovo       | ThinkPad X280     | SL10P97665 |
| Mobile Phone | Samsung      | Samsung Galaxy S4 | N/A        |
| Dummy load   | --           | --                | --         |

### 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)

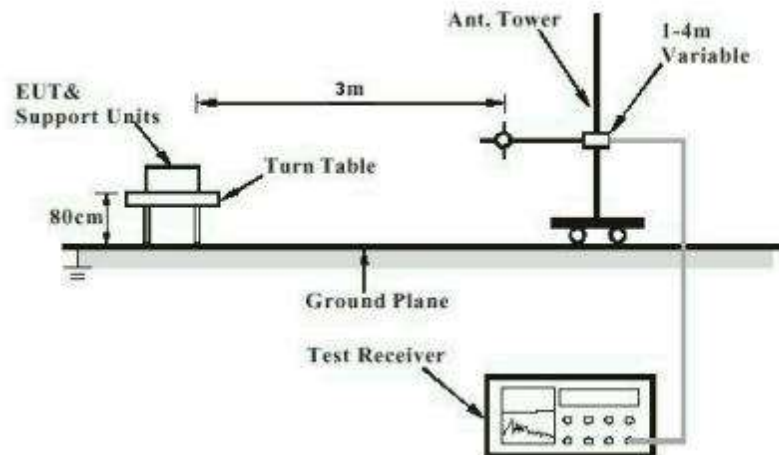
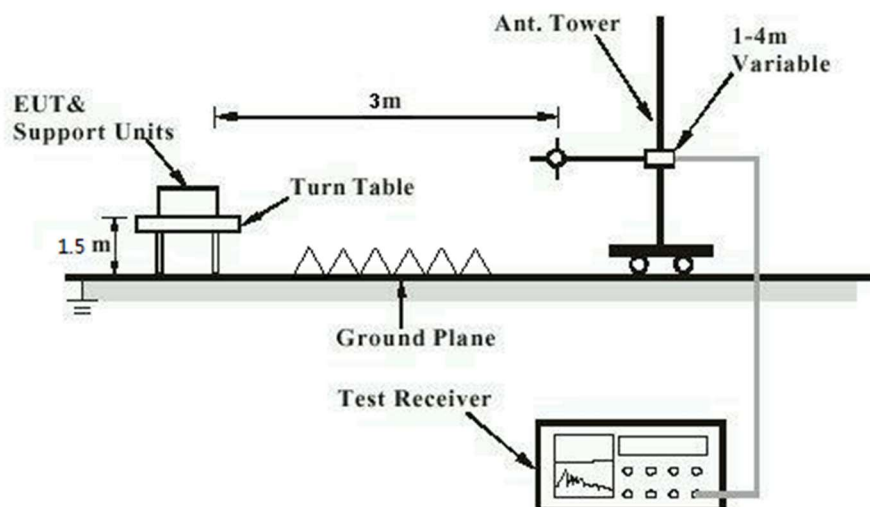
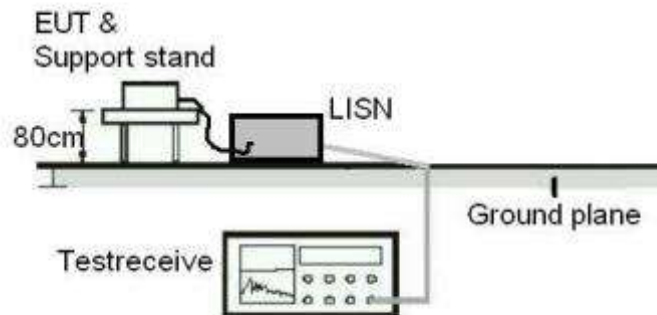


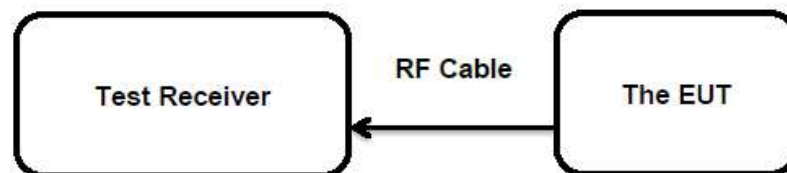
Diagram of Measurement Configuration for Radiation Test (Above 1GHz)



### 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 a Integral antenna, the directional gain of antenna is 4.26 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      | : 2021-11-19                                       |
| Input voltage        | : DC 18V from Adapter (Adapter input AC 120V/60Hz) |
| Operation mode       | : A                                                |
| Test channel         | : Low / Middle / High                              |
| Ambient temperature  | : 24.8 °C                                          |
| Relative humidity    | : 55 %                                             |
| Atmospheric pressure | : 101 kPa                                          |

**Table 5: 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             | -4.37               | 0.0003656 | < 0.125   |
|                        | 2441.0             | -3.05               | 0.0004955 |           |
|                        | 2480.0             | -1.77               | 0.0006653 |           |
| Maximum Measured Value |                    | -1.77               | 0.0006653 |           |

| Test Mode              | Test Channel (MHz) | Measured Peak Power |           | Limit (W) |
|------------------------|--------------------|---------------------|-----------|-----------|
|                        |                    | (dBm)               | (W)       |           |
| 8DPSK (EDR)            | 2402.0             | -4.17               | 0.0003828 | < 0.125   |
|                        | 2441.0             | -4.14               | 0.0003855 |           |
|                        | 2480.0             | -1.10               | 0.0007762 |           |
| Maximum Measured Value |                    | -1.10               | 0.0007762 |           |

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G): 4.26 dBi  
 $e.i.r.p. = P_{(Peak\ power)} + G$ , which is far below the 125 mW

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### 5.1.3 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      | : 2021-11-19                                       |
| Input voltage        | : DC 18V from Adapter (Adapter input AC 120V/60Hz) |
| Operation mode       | : A                                                |
| Test channel         | : Low / Middle / High                              |
| Ambient temperature  | : 24.8 °C                                          |
| Relative humidity    | : 55 %                                             |
| Atmospheric pressure | : 101 kPa                                          |

For the measurement records, refer to the appendix B.

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### 5.1.4 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      | : 2021-11-19                                       |
| Input voltage        | : DC 18V from Adapter (Adapter input AC 120V/60Hz) |
| Operation mode       | : A                                                |
| Test channel         | : Low / Middle / High                              |
| Ambient temperature  | : 24.8 °C                                          |
| Relative humidity    | : 55 %                                             |
| Atmospheric pressure | : 101 kPa                                          |

For the measurement records, refer to the appendix B.



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### 5.1.5 Carrier Frequency Separation

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

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

**Test Setup**

|                      |                                                    |
|----------------------|----------------------------------------------------|
| Date of testing      | : 2021-11-19                                       |
| Input voltage        | : DC 18V from Adapter (Adapter input AC 120V/60Hz) |
| Operation mode       | : B                                                |
| Test channel         | : Low / Middle / High                              |
| Ambient temperature  | : 24.8 °C                                          |
| Relative humidity    | : 55 %                                             |
| Atmospheric pressure | : 101 kPa                                          |

For the measurement records, refer to the appendix B.

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### 5.1.6 Number of Hopping Frequency

RESULT:

Pass

**Test Specification**

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

**Test Setup**

|                      |                                                    |
|----------------------|----------------------------------------------------|
| Date of testing      | : 2021-11-19                                       |
| Input voltage        | : DC 18V from Adapter (Adapter input AC 120V/60Hz) |
| Operation mode       | : B                                                |
| Ambient temperature  | : 24.8 °C                                          |
| Relative humidity    | : 55 %                                             |
| Atmospheric pressure | : 101 kPa                                          |

For the measurement records, refer to the appendix B.

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## 5.1.7 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      | : 2021-11-19                                       |
| Input voltage        | : DC 18V from Adapter (Adapter input AC 120V/60Hz) |
| Operation mode       | : B                                                |
| Test channel         | : Low / Middle / High                              |
| Ambient temperature  | : 24.8 °C                                          |
| Relative humidity    | : 55 %                                             |
| Atmospheric pressure | : 101 kPa                                          |

For the measurement records, refer to the appendix B.

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**5.1.8 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      | : 2021-11-19                                       |
| Input voltage        | : DC 18V from Adapter (Adapter input AC 120V/60Hz) |
| Operation mode       | : A                                                |
| Test channel         | : Low / Middle / High                              |
| Ambient temperature  | : 24.8 °C                                          |
| Relative humidity    | : 55 %                                             |
| 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 B.

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## 5.1.9 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)<br>RSS-Gen Section 8.9 & 8.10 |
| Kind of test site | : 3m Semi-anechoic Chamber                                               |

**Test Setup**

|                      |                                                    |
|----------------------|----------------------------------------------------|
| Date of testing      | : 2021-11-19 to 2021-11-23                         |
| Input voltage        | : DC 18V from Adapter (Adapter input AC 120V/60Hz) |
| Operation mode       | : A                                                |
| 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 B.

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**5.1.10 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      | : 2021-11-22                                       |
| Input voltage        | : DC 18V from Adapter (Adapter input AC 120V/60Hz) |
| Operation mode       | : C                                                |
| Earthing             | : Not connected                                    |
| Ambient temperature  | : 22 °C                                            |
| Relative humidity    | : 64 %                                             |
| 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 A.

## 7 List of Tables

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