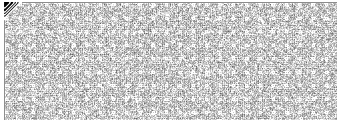
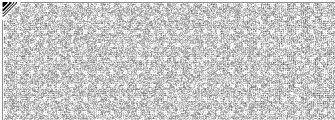
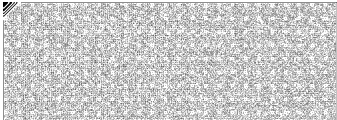




KIEL2409-YW10506

# RF TEST REPORT

|                                                                                                                                                                                                                                                                                                                                                                          |              |                                                                                          |                |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------|----------------|-------------------------|
| Report Number                                                                                                                                                                                                                                                                                                                                                            |              | KIEL2409-YW10506                                                                         |                |                         |
| Applicant                                                                                                                                                                                                                                                                                                                                                                | Company Name | BETTERWHY                                                                                |                |                         |
|                                                                                                                                                                                                                                                                                                                                                                          | Address      | 24-13, 2saneopdanji 2-gil, Waegwan-eup, Chilgok-gun, Gyeongsangbuk-do, Republic of Korea |                |                         |
| Product                                                                                                                                                                                                                                                                                                                                                                  | Product Name | EVCheck                                                                                  |                |                         |
|                                                                                                                                                                                                                                                                                                                                                                          | Model Name   | EVCHECK24BCV01                                                                           |                |                         |
|                                                                                                                                                                                                                                                                                                                                                                          | FCC/IC ID    | 2BKUPEVCHECK24BCV01                                                                      |                |                         |
|                                                                                                                                                                                                                                                                                                                                                                          | Manufacturer | DAEHYUN HI-TECH                                                                          |                |                         |
| Other                                                                                                                                                                                                                                                                                                                                                                    | Receipt Date | 2024.08.21                                                                               | Receipt Number | RQW2409-0352            |
|                                                                                                                                                                                                                                                                                                                                                                          | Issued Date  | 2024.09.12                                                                               | Tested Date    | 2024.08.30 ~ 2024.09.06 |
| Standards                                                                                                                                                                                                                                                                                                                                                                |              | FCC Part 15 Subpart C<br>ANSI C63.13 : 2020                                              |                |                         |
| Tested by                                                                                                                                                                                                                                                                                                                                                                |              | Dominic Sim (Sign)                                                                       |                |                         |
| Approved by                                                                                                                                                                                                                                                                                                                                                              |              | David Jang (Sign)                                                                        |                |                         |
| <div><div>KIEL Institute</div><div>Daewoo Technopark A-403, 261, Doyak-ro, Bucheon-si, Gyeonggi-do, 14523, Korea.<br/>Tel : +82-32-670-8888, Fax : +82-32-670-8889</div></div>                                                                                                                                                                                           |              |                                                                                          |                |                         |
| <p><i>o This is certified that the above mentioned products have been tested for the sample provided by client.</i></p> <p><i>o No part of this document may not be duplicated or reproduced by any means without the express written permission of KIEL Institute.</i></p> <p><i>o This test report is irrelevant to KS Q ISO/IEC 17025 and KOLAS accreditation</i></p> |              |                                                                                          |                |                         |

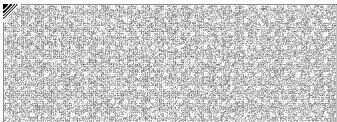




KIEL2409-YW10506

Revision History

| Issued Date | Issued Report No. | Revisions     |
|-------------|-------------------|---------------|
| 2024.09.12  | KIEL2409-YW10506  | Initial Issue |





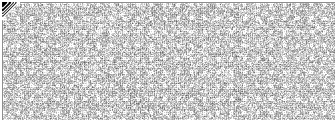
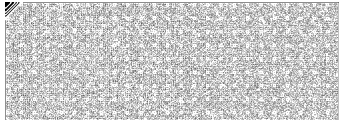
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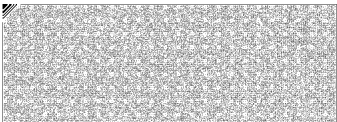
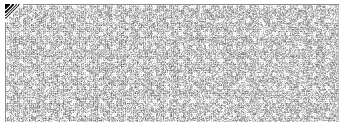
KIEL2409-YW10506

1.0 Laboratory Information

|                      |                                                       |
|----------------------|-------------------------------------------------------|
| Laboratory Name      | KIEL Institute                                        |
| Location             | 1-1, Gilju-ro, Bucheon-city, Gyeonggi-do, Korea 14505 |
| FCC Registration No. | KR0167 (RRA accredited Lab.)                          |
| IC Registration No.  | KR0167 (31291)                                        |
| Phone                | +82-32-325-7045                                       |
| Fax                  | +82-32-670-8889                                       |

2.0 Applicant Information

|                |                                                                                          |
|----------------|------------------------------------------------------------------------------------------|
| Applicant Name | BETTERWHY                                                                                |
| Address        | 24-13, 2saneopdanji 2-gil, Waegwan-eup, Chilgok-gun, Gyeongsangbuk-do, Republic of Korea |
| Manufacturer   | DAEHYUN HI-TECH                                                                          |
| Address        | 35-7, Geumo-daero 4-gil, Buksam-eup, Chilgok-gun, Gyeongsangbuk-do, Republic of Korea    |



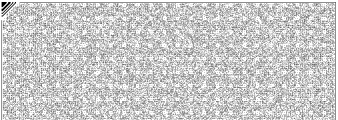
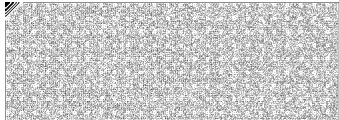


3.0 Summary of Test Results

Applied standard: FCC part 15, subpart C 15.247

| FCC Part Section(s) | Test Item                                                                     | Reference   | Result |
|---------------------|-------------------------------------------------------------------------------|-------------|--------|
| 15.247 (a)(2)       | 6 dB Channel Bandwidth (DTS Bandwith)                                         | Section 6.2 | P      |
| 15.247 (b)(3)       | Maximum Conducted Output Power                                                | Section 6.3 | P      |
| 15.247 €            | Power Spectral Density                                                        | Section 6.4 | P      |
| 15.247 (d)          | Band Edge / Out-of-Band Emissions (Conducted Spurious Emission)               | Section 6.5 | P      |
| 15.205<br>15.209    | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | Section 6.5 | P      |
| 15.207              | AC Power Line Conducted Emissions (150 kHz – 30 MHz)                          | Section 6.6 | P      |

- (Note 1) P = Pass, NC = Not comply, NT = Not Tested, NA = Not Applicable
- (Note 2) The general test methods used to test on this devices are ANSI C63.10.
- (Note 3) Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- (Note 4) For emission test from 9 kHz to 30 MHz,  
Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.



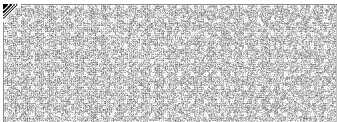


3.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2

| Measurement Items                | Frequency Range  | Expanded Uncertainty<br>U = kUc (k = 2) |
|----------------------------------|------------------|-----------------------------------------|
| Conducted Emission at main ports | 150 kHz – 30 MHz | 3.24 dB                                 |
| Radiated Spurious Emissions      | 9 kHz – 30 MHz   | 3.39 dB                                 |
|                                  | 30 MHz – 1 GHz   | 5.14 dB                                 |
|                                  | 1 GHz – 18 GHz   | 3.18 dB                                 |
|                                  | 18 GHz – 40 GHz  | 4.54 dB                                 |

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k = 2.





## 4.0 General Information

### 4.1 EUT Description

|                            |                     |
|----------------------------|---------------------|
| <b>Product name</b>        | EVCheck             |
| <b>Basic model</b>         | EVCHECK24BCV01      |
| <b>Product S/N</b>         | -                   |
| <b>Variant model(s)</b>    | -                   |
| <b>Model Difference</b>    | -                   |
| <b>Power supply</b>        | DC 12 V             |
| <b>Modulation</b>          | GFSK                |
| <b>Transfer Rate</b>       | BLE : 1 [Mbps]      |
| <b>Operating Frequency</b> | 2 402 ~ 2 480 [MHz] |
| <b>Number of channel</b>   | 40 channels         |
| <b>Output Power</b>        | 3.83 dBm (2.42 mW)  |
| <b>Antenna Type</b>        | PCB Pattern(1T1R)   |
| <b>Antenna Connector</b>   | Integral antenna    |

(Note 1) The above equipment has been tested by KIEL Institute, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

#### 4.1.1 List of Accessories

| Accessories | Brand | Model | Manufacturer | Specification |
|-------------|-------|-------|--------------|---------------|
| -           | -     | -     | -            | -             |

#### 4.1.2 Auxiliary Test equipment

| Accessories        | Brand                     | Model       | Manufacturer                               | Specification                                           |
|--------------------|---------------------------|-------------|--------------------------------------------|---------------------------------------------------------|
| Laptop             | Lenovo IdeaPad S500 Touch | 20248       | Lenovo PC HK Limited                       | -                                                       |
| AC Adapter(Laptop) | Lenovo                    | ADLX45NCC3A | CHICONY POWER TECHNOLOGY (SUZHOU) CO.,LTD. | Input: AC 100 V ~ 240 V / 50 ~ 60 Hz<br>Output: DC 20 V |





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4.1.3 Antenna Information

| Antenna              | Type        | Frequency Range         | Peak Gain |
|----------------------|-------------|-------------------------|-----------|
| Ant A<br>(Bluetooth) | PCB Pattern | 2 400 MHz – 2 483.5 MHz | 3.42 dBi  |

4.1.4 Channel List of EUT

| Bluetooth |                 |         |                 |         |                 |         |                 |
|-----------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| Channel   | Frequency [MHz] | Channel | Frequency [MHz] | Channel | Frequency [MHz] | Channel | Frequency [MHz] |
| 0         | 2 402           | 10      | 2 422           | 20      | 2 442           | 30      | 2 462           |
| 1         | 2 404           | 11      | 2 424           | 21      | 2 444           | 31      | 2 464           |
| 2         | 2 406           | 12      | 2 426           | 22      | 2 446           | 32      | 2 466           |
| 3         | 2 408           | 13      | 2 428           | 23      | 2 448           | 33      | 2 468           |
| 4         | 2 410           | 14      | 2 430           | 24      | 2 450           | 34      | 2 470           |
| 5         | 2 412           | 15      | 2 432           | 25      | 2 452           | 35      | 2 472           |
| 6         | 2 414           | 16      | 2 434           | 26      | 2 454           | 36      | 2 474           |
| 7         | 2 416           | 17      | 2 436           | 27      | 2 456           | 37      | 2 476           |
| 8         | 2 418           | 18      | 2 438           | 28      | 2 458           | 38      | 2 478           |
| 9         | 2 420           | 19      | 2 440           | 29      | 2 460           | 39      | 2 480           |





## 4.2 Description of Test Mode

### 4.2.1 Test Mode Configuration

#### - Axis worst case

Pre-Scan has been performed to determine the worst case axis between antenna port, XYZ axis and frequency band.

| EUT Configuration | Applicable to    | Description |
|-------------------|------------------|-------------|
|                   | Ant A(Bluetooth) |             |
| Transmission      | X axis           | -           |

#### - Radiated Emission (Below 1 GHz, Above 18 GHz, and AC Power line conducted emission) worst case

Radiated emission below 1 GHz, above 18 GHz and AC power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

| Tested Mode | Tested Channel | Packet Type | Description |
|-------------|----------------|-------------|-------------|
| LE1M        | 39             | 1 Mbps      | -           |

#### - Radiated Emission (Above 1 GHz)

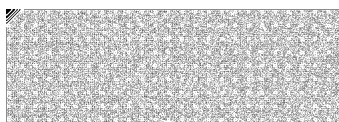
Radiated emission above 1 GHz was performed with the EUT set to transmit Low/Mid/High channels.

| Tested Mode | Tested Channel | Data Rate / Packet Type | Description |
|-------------|----------------|-------------------------|-------------|
| LE1M        | 0, 19, 39      | 1 Mbps                  | -           |

#### - Antenna Port Conducted Measurement

This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

| Tested Mode | Tested Channel | Data Rate / Packet Type | Description |
|-------------|----------------|-------------------------|-------------|
| LE1M        | 0, 19, 39      | 1 Mbps                  | -           |





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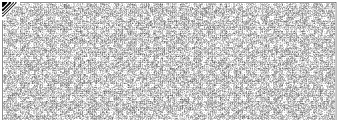
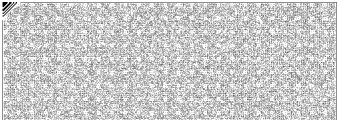
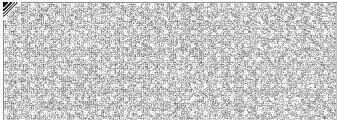
**- Test Conditon**

| Appleable to               | Environmental Conditions         | Test Voltage | Tested by   |
|----------------------------|----------------------------------|--------------|-------------|
| Radiated emissions(< 1GHz) | (21.5 ± 2) °C, (43.7 ± 3) % R.H. | DC 12 V      | Dominic Sim |
| Radiated emissions(> 1GHz) | (23.2 ± 2) °C, (45.6 ± 3) % R.H. | DC 12 V      | Dominic Sim |
| AC power line emission     | (20.4 ± 2) °C, (57.6 ± 3) % R.H. | DC 12 V      | Dominic Sim |
| Antenna port conducted     | (22.3 ± 2) °C, (45.2 ± 3) % R.H. | DC 12 V      | Dominic Sim |

**- Worst case of data rates**

| Transmission | Test Mode | Bandwidth [MHz] | Worst Case Data Rate / Packet Type |
|--------------|-----------|-----------------|------------------------------------|
| SISO         | LE1M      | 1               | 1 Mbps                             |

| Test Mode | Data Rate | Max Peak Output Power |
|-----------|-----------|-----------------------|
| LE1M      | 1 Mbps    | 3.83 dBm              |



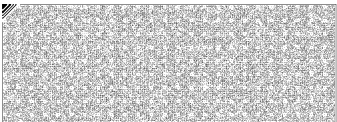
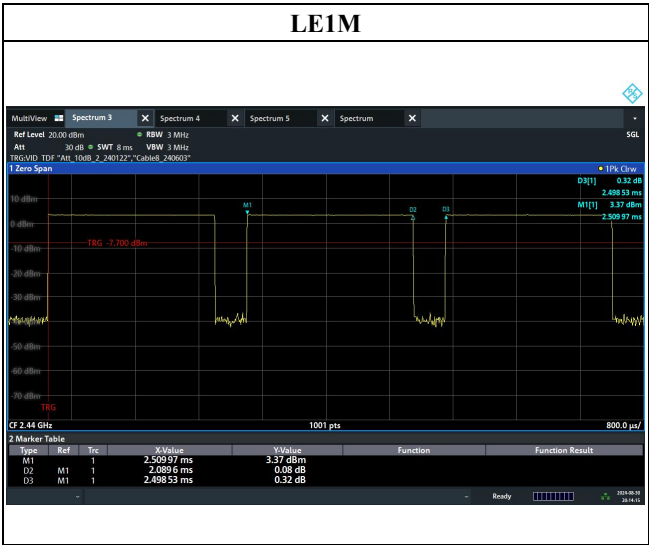


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**- Duty Cycle of Test Signal**

| Test Mode | On Time<br>[msec] | Period<br>[msec] | Duty cycle X<br>[Linear] | Duty Cycle<br>[%] | DCCF<br>[dB] |
|-----------|-------------------|------------------|--------------------------|-------------------|--------------|
| LE1M      | 2.090             | 2.499            | 0.836                    | 83.63             | 0.78         |

**- Test Plots of Duty Cycle**



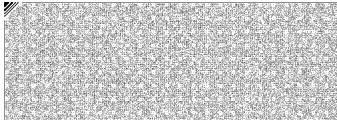
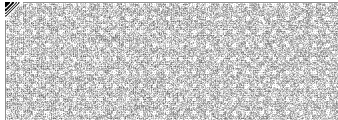


### 4.3 General Description of Applied Standard

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards.

**FCC CFR 47 Part 15, Subpart C (§15.247)**  
**KDB 558074 D01 15.247 Meas Guidance v05r02**  
**ANSI C63.10-2020**

All test items in this test report have been performed and recorded as per the above standards.





## 5.0 Test Equipment

Test Equipment is traceable to the National Institute of Standards and Technology (NIST). Measurement antenna used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

|   | Equipment               | Manufacturer       | Model       | S/N               | Description                      | Cal Due    |
|---|-------------------------|--------------------|-------------|-------------------|----------------------------------|------------|
| ■ | Spectrum Analyzer       | Rohde & Schwarz    | FSV3044     | 101034            | 10 Hz ~ 44 GHz                   | 2025-01-22 |
| ■ | Spectrum Analyzer       | Rohde & Schwarz    | FSV3030     | 102117            | 10 Hz ~ 30 GHz                   | 2025-05-21 |
| ■ | DC Power Supply         | ODA                | OPM-305D    | ODA-04-0923-07960 | DC 30 V, 5 A, 2Ch                | 2025-01-24 |
| ■ | Signal Generator        | Rohde & Schwarz    | SMBV100B    | 101818            | 8 kHz ~ 6 GHz                    | 2025-01-23 |
| ■ | Vector Signal Generator | Rohde & Schwarz    | SMB100A     | 180880            | 100 kHz ~ 40 GHz                 | 2025-05-20 |
| ■ | Attenuator              | INMET              | 26A-10      | 2                 | DC to 26.5 GHz, 10 dB.           | 2025-01-22 |
| ■ | Attenuator              | INMET              | 26A-10      | 3                 | DC to 26.5 GHz, 10 dB.           | 2025-01-22 |
| ■ | True RMS Multimeter     | FLUKE              | 177         | 59570153          | 1000 V, 10 A                     | 2025-01-24 |
| ■ | Power Meter             | Rohde & Schwarz    | NRX         | 101971            | DC ~ 40 GHz                      | 2025-01-23 |
| ■ | Power Sensor            | Rohde & Schwarz    | NRP-Z86     | 104137            | 50 MHz ~ 40 GHz                  | 2025-05-27 |
| ■ | Notch Filter            | Micro-Tronics      | BRM50702    | G577              | Stop band: 2 400 MHz ~ 2 500 MHz | 2025-05-22 |
| ■ | High Pass Filter        | WT Microwave INC.  | WT-A3331-HS | 23041001-1        | Pass band: 6.0 GHz ~ 24.5 GHz    | 2025-05-22 |
| ■ | EMI Test Receiver       | Rohde & Schwarz    | ESW44       | 101737            | 1 Hz ~ 44 GHz                    | 2025-01-22 |
| ■ | EMI Test Receiver       | Rohde & Schwarz    | ESW26       | 103106            | 1 Hz ~ 26.5 GHz                  | 2025-01-22 |
| ■ | Active Loop Antenna     | Rohde & Schwarz    | HFH2-Z2E    | 100858            | 8.3 kHz ~ 30 MHz                 | 2026-05-24 |
| ■ | Bi-Log Antenna          | SCHWARZBECK        | VULB9168    | 00916             | 25 MHz ~ 2 GHz                   | 2025-06-01 |
| ■ | Horn Antenna            | Rohde & Schwarz    | HF907       | 102722            | 800 MHz ~ 18 GHz                 | 2025-05-30 |
| ■ | Horn Antenna            | SCHWARZBECK        | BBHA9170    | 00981             | 15 GHz ~ 40 GHz                  | 2025-01-30 |
| ■ | Preamplifier            | Rohde & Schwarz    | SCU-01F     | 010096            | 10 kHz ~ 1 GHz, 35 dB            | 2025-05-20 |
| ■ | Preamplifier            | Rohde & Schwarz    | SCU-18F     | 180084            | 1 GHz ~ 18 GHz                   | 2025-05-20 |
| ■ | Preamplifier            | EXYNOD             | ELNA40-50   | 2305161           | 18 GHz ~ 40 GHz                  | 2025-05-22 |
| ■ | 6dB Attenuator          | Fairview Microwave | SA3N5W-06   | 190311029         | DC ~ 3 GHz, 6 dB                 | 2025-06-01 |
| ■ | EMI Test Receiver       | Rohde & Schwarz    | ESR3        | 102444            | 10 Hz ~ 3 GHz                    | 2025-05-20 |
| ■ | LISN                    | Rohde & Schwarz    | ENV216      | 102347            | 9 kHz ~ 30 MHz                   | 2025-05-20 |
| ■ | LISN                    | AFJ                | LT32C/10    | 32031816260       | 9 kHz ~ 30 MHz                   | 2025-05-20 |
| ■ | Turntable               | Innco              | DT 3000-3t  | -                 | -                                | -          |
| □ | Antenna Mast_L          | Innco              | MA4000-EP   | -                 | -                                | -          |
| ■ | Antenna Mast_R          | Innco              | MA4000-EP   | -                 | -                                | -          |
| ■ | Controller_1            | Innco              | CO3000      | 1062              | -                                | -          |
| ■ | Controller_2            | Innco              | CO3000      | 1063              | -                                | -          |





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|   |          |                 |         |        |   |   |
|---|----------|-----------------|---------|--------|---|---|
| ■ | Software | Rohde & Schwarz | EMC32   | 101535 | - | - |
| ■ | Software | Rohde & Schwarz | ELEKTRA | 102739 | - | - |

6.0 Test Results

6.1 Antenna Requirement

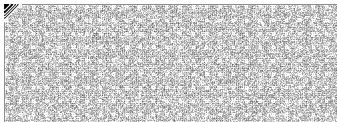
Except from §15.203 of the FCC Rules/Regulations:

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

- The antenna(s) of the EUT are permanently attached antenna
- There are no provisions for connection to an external antenna.

6.1.1 Result

The EUT complies with the requirement of §15.203



## 6.2 6 dB Bandwidth

### 6.2.1 Regulation

§15.247(a)(2) : Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

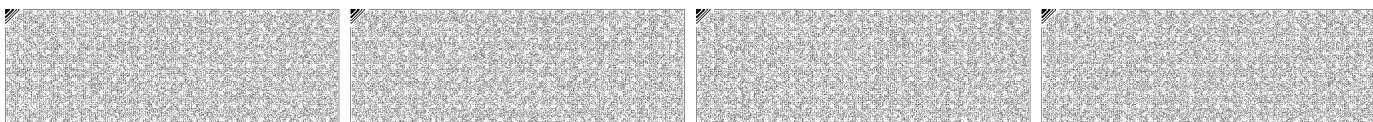
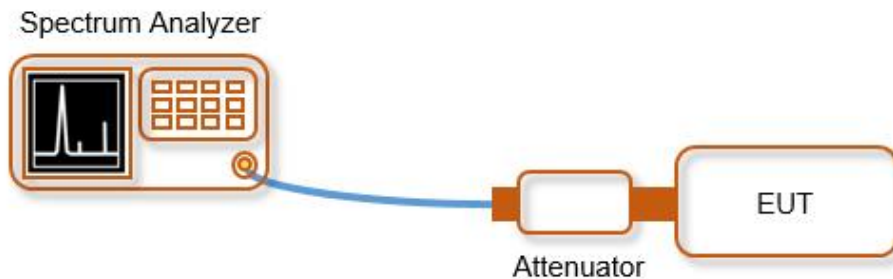
### 6.2.2 Test Procedure

The method of measurement used to test this DTS device is ANSI C63.10-2020.

The following procedures shall be used for measuring the OBW of the fundamental frequencies of certain unlicensed wireless devices, when required.

- a) Use the following spectrum analyzer settings:
  - 1) Set RBW = shall be in the range of 1 % to 5 % of the OBW but not less than 100 kHz.
  - 2) Set the VBW  $\geq [3 \times \text{RBW}]$ .
  - 3) Detector = Peak.
  - 4) Trace mode = Max hold.
  - 5) Sweep = No faster than coupled (auto) time.
- b) Allow trace to stabilize
- c) Use the N dB down function and set N value to -6.
- d) In case of 99 % bandwidth, Use 99 % power bandwidth function.
- e) A plot of the test results and setup description shall be included in the test report.

### 6.2.3 Test Setup

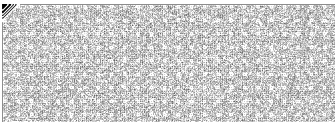




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6.2.4 Test Result

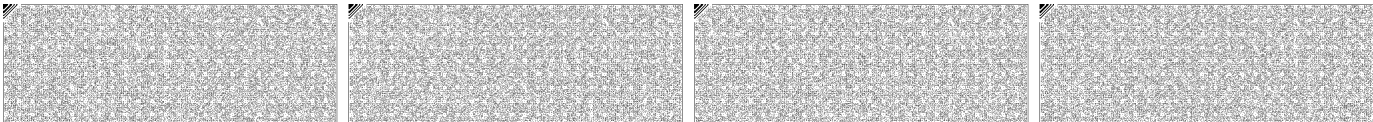
| Test Mode | Channel | Frequency<br>[MHz] | 6 dB BW<br>[MHz] |
|-----------|---------|--------------------|------------------|
| LE1M      | 0       | 2.402              | 0.650            |
|           | 19      | 2.440              | 0.650            |
|           | 39      | 2.480              | 0.650            |





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Test Plot of 6 dB Bandwidth





## 6.3 Maximum Peak Output Power

### 6.3.1 Regulation

§15.247(b)(3) : For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

§15.247(b)(4) : The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### 6.3.2 Test Procedure

The method of measurement used to test this DTS device is ANSI C63.10-2020.

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

#### Peak Power Measurement

##### 1. RBW $\geq$ DTS bandwidth

- a) Use the following spectrum analyzer settings:
  - 1) Set the RBW  $\geq$  DTS bandwidth.
  - 2) Set VBW  $\geq$  [3 x RBW].
  - 3) Set Span  $\geq$  [3 x RBW].
  - 4) Sweep time : No faster than coupled (auto) time.
  - 5) Detector = Peak.
  - 6) Trace mode = Max hold.
- b) Allow trace to stabilize
- c) Use peak marker function to determine the peak amplitude level

#### Average Power Measurement

Measurement using a power meter.

- a) Average Power measurement using an RF average power meter, as follows:

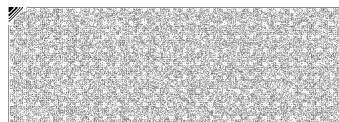
- 1) The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
- 2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
- 3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

- b) If the transmitter does not transmit continuously, measure the duty cycle, D, of the transmitter output signal.

- c) Measure the average power of the transmitter.

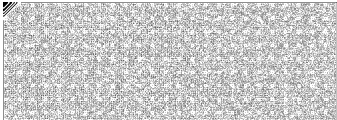
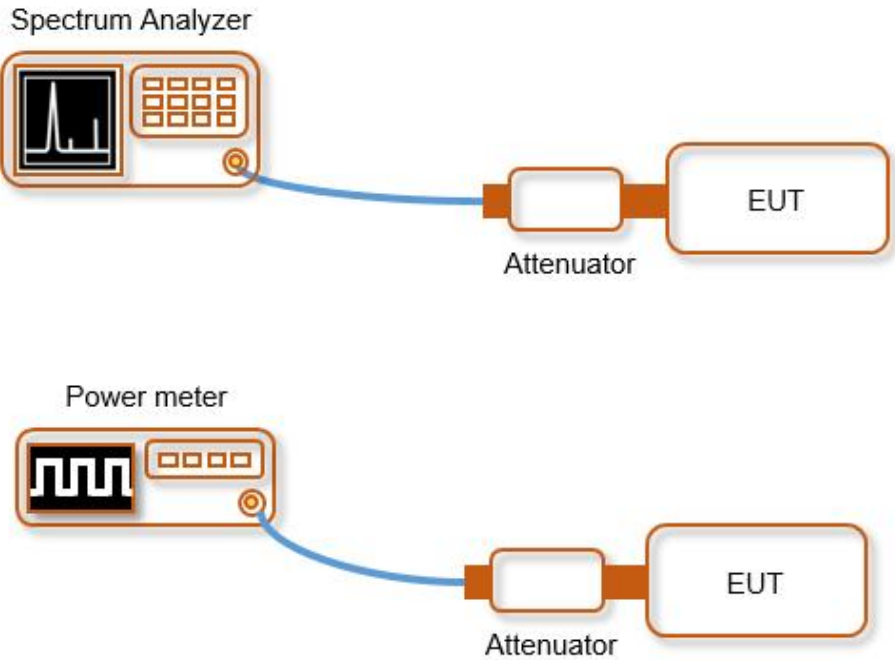
This measurement is an average over both the ON and OFF periods of the transmitter.

- d) Correct the measurement in dBm by adding  $[10 \log (1 / D)]$ , where D is the duty cycle.





6.3.3 Test Setup





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6.3.4 Test Result

| Test Mode | Channel | Frequency [MHz] | Peak Output Power [dBm] | Limit [dBm] | Margin [dB] |
|-----------|---------|-----------------|-------------------------|-------------|-------------|
| LE1M      | 0       | 2 402           | 2.81                    | 30          | 27.19       |
|           | 19      | 2 440           | 3.78                    |             | 26.22       |
|           | 39      | 2 480           | 3.83                    |             | 26.17       |





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Test Plot of Peak Output power

