

ISED CABid: ES1909

Lab. Company Number: 4621A

Test Report No:  
74747RRF.001

## Partial Test Report

### USA FCC Part 15.247, 15.209

### CANADA RSS-247, RSS-Gen

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (*) Identification of item tested         | TETRA portable radio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (*) Trademark                             | SEPURA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| (*) Model and /or type reference          | SC2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Other identification of the product       | FCC ID: XX6SC2024M<br>IC: 8739A-SC2024M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| (*) Features                              | TETRA, BT, Wi-Fi, GNSS<br>HW version: PLX-2116545-01 (mod state 11)<br>SW version: 000193453124400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Applicant                                 | Sepura Limited<br>9000 Cambridge Research Park, Beach Drive,<br>Waterbeach, Cambridge CB25 9TL, UK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Test method requested, standard           | USA FCC Part 15.247 (10-1-21 Edition): Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz.<br>USA FCC Part 15.209 (10-1-21 Edition): Radiated emission limits; general requirements.<br>CANADA RSS-247 Issue 2 (February 2017).<br>CANADA RSS-Gen Issue 5 amendment 1 (March 2019).<br>Guidance for Performing Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid Systems Devices Operating Under Section 15.247 of the FCC Rules.<br>558074 D01 Meas Guidance v05r02 dated April 2, 2019.<br>ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices. |
| Approved by (name / position & signature) | José Manuel Gómez Galván<br>EMC Consumer & RF<br>Lab. Manager<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Date of issue                             | 2023-07-06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Report template No                        | FDT08_24<br>(*) "Data provided by the client"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

# Index

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|                                                     |    |
|-----------------------------------------------------|----|
| Index.....                                          | 2  |
| Acronyms.....                                       | 3  |
| Competences and guarantees .....                    | 3  |
| General conditions .....                            | 3  |
| Uncertainty .....                                   | 4  |
| Data provided by the client.....                    | 4  |
| Usage of samples .....                              | 4  |
| Test sample description .....                       | 5  |
| Identification of the client.....                   | 6  |
| Testing period and place .....                      | 6  |
| Document history .....                              | 6  |
| Environmental conditions .....                      | 6  |
| Remarks and comments .....                          | 7  |
| Testing verdicts.....                               | 7  |
| Summary .....                                       | 8  |
| Appendix A: Test results. Bluetooth EDR.....        | 9  |
| Appendix B: Test results. Bluetooth Low Energy..... | 14 |

## Acronyms

| Acronym ID      | Acronym Description                    |
|-----------------|----------------------------------------|
| # of Tx Chains  | Number of Transmission Chains          |
| Avg Power       | Maximum Average Conducted Output Power |
| Equipment       | Equipment Type                         |
| Freq            | Frequency                              |
| Freq Rng        | Frequency Range                        |
| Inband Peak Lvl | Inband Peak Level                      |
| Lvl             | Level                                  |
| Mod             | Modulation                             |
| Port            | Active Port                            |
| Unwanted Freq   | Unwanted Emissions Frequency           |
| Unwanted Lvl    | Unwanted Emissions Level               |
| EIRP            | Effective Isotropic Radiated Power     |

## Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification is an FCC-recognized accredited testing laboratory with appropriate scope of accreditation that covers the performed tests in this report.

DEKRA Testing and Certification is an ISED-recognized accredited testing laboratory, CABid: ES1909, Company Number: 4621A, with the appropriate scope of accreditation that covers the performed tests in this report.

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DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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## General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
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## Uncertainty

Uncertainty (factor  $k=2$ ) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the conducted testing of EUT is:

RF Peak Output Power: Measurement uncertainty  $\leq \pm 0,80$  dB

RF Average Output Power: Measurement uncertainty  $\leq \pm 0,99$  dB

## Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").
2. The sample consists of a SC2024 hand-held portable radios are TETRA enabled radios with Bluetooth and Wi-Fi and GNSS capability.

## Usage of samples

Samples undergoing test have been selected by: The client.

| Id   | Control Number | Description    | Model  | Serial N°       | Date of Reception | Application        |
|------|----------------|----------------|--------|-----------------|-------------------|--------------------|
| S/01 | 74747_7        | Portable radio | SC2024 | 1PR002311GKE4ZK | 2023-06-13        | Element Under Test |
| S/01 | 74747_5        | Battery        | -      | -               | 2023-06-13        | Element Under Test |
| S/01 | 74747_3        | USB Cable      | -      | -               | 2023-06-13        | Element Under Test |

Notes referenced to samples during the project:

| Id   | Type      |
|------|-----------|
| S/01 | Conducted |

## Test sample description

|                                               |                                                                                           |                                |                          |                          |                                   |                          |                          |
|-----------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------|-----------------------------------|--------------------------|--------------------------|
| Ports..... :                                  | Port name and description                                                                 | Cable                          |                          |                          |                                   |                          |                          |
|                                               |                                                                                           | Specified max length [m]       | Attached during test     | Shielded                 | Coupled to patient <sup>(3)</sup> |                          |                          |
|                                               |                                                                                           |                                |                          |                          |                                   |                          |                          |
| Supplementary information to the ports..... : | .....                                                                                     |                                |                          |                          |                                   |                          |                          |
| Rated power supply .....                      | Voltage and Frequency                                                                     |                                | Reference poles          |                          |                                   |                          |                          |
|                                               |                                                                                           |                                | L1                       | L2                       | L3                                | N                        | PE                       |
|                                               | <input type="checkbox"/>                                                                  | AC: .....                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>          | <input type="checkbox"/> | <input type="checkbox"/> |
|                                               | <input checked="" type="checkbox"/>                                                       | DC: 7.4 V Battery operated     |                          |                          |                                   |                          |                          |
| Rated Power .....                             |                                                                                           |                                |                          |                          |                                   |                          |                          |
| Clock frequencies..... :                      | .....                                                                                     |                                |                          |                          |                                   |                          |                          |
| Other parameters .....                        | .....                                                                                     |                                |                          |                          |                                   |                          |                          |
| Software version .....                        | 000193453124400                                                                           |                                |                          |                          |                                   |                          |                          |
| Hardware version .....                        | PLX-2116545-01 ( mod state 11)                                                            |                                |                          |                          |                                   |                          |                          |
| Dimensions in cm (W x H x D) .....            | Height: 139mm (excluding antenna and rotary) Width: 61mm (54mm)<br>Depth – standard batte |                                |                          |                          |                                   |                          |                          |
| Mounting position .....                       | <input type="checkbox"/>                                                                  | Table top equipment            |                          |                          |                                   |                          |                          |
|                                               | <input type="checkbox"/>                                                                  | Wall/Ceiling mounted equipment |                          |                          |                                   |                          |                          |
|                                               | <input type="checkbox"/>                                                                  | Floor standing equipment       |                          |                          |                                   |                          |                          |
|                                               | <input checked="" type="checkbox"/>                                                       | Hand-held equipment            |                          |                          |                                   |                          |                          |
|                                               | <input checked="" type="checkbox"/>                                                       | Other: Body wen                |                          |                          |                                   |                          |                          |
| Modules/parts..... :                          | Module/parts of test item                                                                 |                                | Type                     |                          | Manufacturer                      |                          |                          |
|                                               |                                                                                           |                                |                          |                          |                                   |                          |                          |
| Accessories (not part of the test item) ..... | Description                                                                               |                                | Type                     |                          | Manufacturer                      |                          |                          |
|                                               |                                                                                           |                                |                          |                          |                                   |                          |                          |
| Documents as provided by the applicant..... : | Description                                                                               |                                | File name                |                          | Issue date                        |                          |                          |
|                                               |                                                                                           |                                |                          |                          |                                   |                          |                          |

<sup>(3)</sup> Only for Medical Equipment

## Identification of the client

Sapura Limited  
9000 Cambridge Research Park, Beach Drive, Waterbeach, Cambridge CB25 9TL, UK

## Testing period and place

|               |                                        |
|---------------|----------------------------------------|
| Test Location | DEKRA Testing and Certification S.A.U. |
| Date (start)  | 2023-06-14                             |
| Date (finish) | 2023-06-14                             |

## Document history

| Report number | Date       | Description    |
|---------------|------------|----------------|
| 74747RRF.001  | 06-07-2023 | First release. |

## Environmental conditions

In the control chamber, the following limits were not exceeded during the test:  
In the chamber for conducted measurements, the following limits were not exceeded during the test:

|                   |                              |
|-------------------|------------------------------|
| Temperature       | Min. = 15 °C<br>Max. = 35 °C |
| Relative humidity | Min. = 20 %<br>Max. = 75 %   |

## Remarks and comments

The tests have been performed by the technical personnel: Sergio Carrasco.

Used instrumentation:

| Control No. | Equipment                                  | Model           | Manufacturer      | Next Calibration |
|-------------|--------------------------------------------|-----------------|-------------------|------------------|
| 7796        | EXTENSION FOR OPEN SWITCH UNIT UP TO 40GHz | OSP-B157Wx      | ROHDE AND SCHWARZ | 2024-03-16       |
| 6668        | SIGNAL AND SPECTRUM ANALYZER 10Hz-40GHz    | FSV40           | ROHDE AND SCHWARZ | 2024-12-14       |
| 8848        | OPEN SWITCH UNIT UP TO 7.5 GHz             | OSP-B157W8 PLUS | ROHDE & SCHWARZ   | 2023-08-20       |
| 6793        | SHIELDED ROOM                              | S101            | ETS LINDGREN      | N/A              |
| 7798        | WMS32                                      | WMS32           | ROHDE AND SCHWARZ | N/A              |
| 5850        | DIGITAL MULTIMETER                         | 179             | FLUKE             | 2023-11-02       |

## Testing verdicts

|                |     |
|----------------|-----|
| Fail           | F   |
| Inconclusive   | I   |
| Not applicable | N/A |
| Not measured   | N/M |
| Pass           | P   |

## Summary

### Bluetooth EDR

| Requirement – Test case                                                                                                                                                                   | FCC PART 15 PARAGRAPH / RSS-247 | Verdict | Remark |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------|--------|
| RSS-247 5.1 (b) / FCC 15.247 (a) (1) 20 dB Bandwidth                                                                                                                                      |                                 | N/M     | (1)    |
| RSS-247 5.1 (d) / FCC 15.247 (a) (1) (iii) Time of Occupancy (Dwell Time)                                                                                                                 |                                 | N/M     | (1)    |
| RSS-247 5.4. (b) / FCC 15.247 (b) Maximum peak output power and antenna gain                                                                                                              |                                 | P*      | (2)    |
| RSS-247 5.1 (d) / FCC 15.247 (a) (1) (iii) Number of hopping channels                                                                                                                     |                                 | N/M     | (1)    |
| RSS-247 5.5 / FCC 15.247 (d) Band-edge emissions compliance (Transmitter)                                                                                                                 |                                 | N/M     | (1)    |
| RSS-247 5.5 / FCC 15.247 (d) Emission limitations radiated (Transmitter)                                                                                                                  |                                 | N/M     | (1)    |
| <u>Supplementary information and remarks:</u><br>(1) Test not requested<br>(2) Spot-check requested only in middle channel for DH5 modulation as worst case according to RF output power. |                                 |         |        |

### Bluetooth Low Energy

| FCC PART 15 PARAGRAPH/ RSS-247                                                                                                                                       |                                              |         |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|---------|--------|
| Requirement – Test case                                                                                                                                              |                                              | Verdict | Remark |
| FCC 15.247 (a)(2) / RSS-247 5.2. (a)                                                                                                                                 | 6 dB Bandwidth                               | N/M     | (1)    |
| FCC 15.247 (b) / RSS-247 5.4. (d)                                                                                                                                    | Maximum output power and antenna gain        | P*      | (2)    |
| FCC 15.247 (d) / RSS-247 5.5.                                                                                                                                        | Band-edge emissions compliance (Transmitter) | N/M     | (1)    |
| FCC 15.247 (e) / RSS-247 5.2. (b)                                                                                                                                    | Power spectral density                       | N/M     | (1)    |
| FCC 15.247 (d) / RSS-247 5.5.                                                                                                                                        | Emission limitations radiated (Transmitter)  | N/M     | (1)    |
| <u>Supplementary information and remarks:</u><br>(1) Test not requested<br>(2) Spot-check requested only in high channel as worst case according to RF output power. |                                              |         |        |

## Appendix A: Test results. Bluetooth EDR

# INDEX

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|                                                                                       |    |
|---------------------------------------------------------------------------------------|----|
| TEST CONDITIONS .....                                                                 | 11 |
| TEST CASES DETAILS.....                                                               | 12 |
| RSS-247 5.4 (b) / FCC 15.247 (b) (1) [Pkcp] Maximum Peak Conducted output power ..... | 12 |

# TEST CONDITIONS

(\*): Data provided by the client.

POWER SUPPLY (\*):

|                       |          |
|-----------------------|----------|
| Vnominal:             | 7.4 V DC |
| Type of Power Supply: | Battery  |

ANTENNA (\*):

|                                |                       |
|--------------------------------|-----------------------|
| Type of Antenna:               | Internal PIFA antenna |
| Maximum Declared Antenna Gain: | +2.5 dBi              |

CONDUCTED TEST FREQUENCIES (\*):

|                 |          |
|-----------------|----------|
| Middle Channel: | 2441 MHz |
|-----------------|----------|

MODULATION (\*):

BTEDR GFSK

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



# TEST CASES DETAILS

## RSS-247 5.4 (b) / FCC 15.247 (b) (1) [Pkcp] Maximum Peak Conducted output power

### Limits

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels: 1 watt (30 dBm).

The e.i.r.p. shall not exceed 4 W (36 dBm) (RSS-247).

### Results

The maximum peak conducted output power level of the fundamental emission was measured according to clause 7.8.5 “Output power test procedure for frequency-hopping spread-spectrum (FHSS) devices” of ANSI C63.10-2013.

The EIRP power (dBm) is calculated by adding the maximum declared antenna gain to the measured conducted power.

Maximum Declared Antenna Gain: 2.5 dBi

Modulation: BT (GFSK 1-DH5)

| Freq (MHz) | Equipment                                       | BW (MHz) | # of Tx Chains | Port | Peak Power (dBm) | E.I.R.P. (dBm) |
|------------|-------------------------------------------------|----------|----------------|------|------------------|----------------|
| 2441.000   | Frequency Hopping Spread Spectrum systems (DSS) | 1        | 1              | 1    | 8.95             | 11.45          |

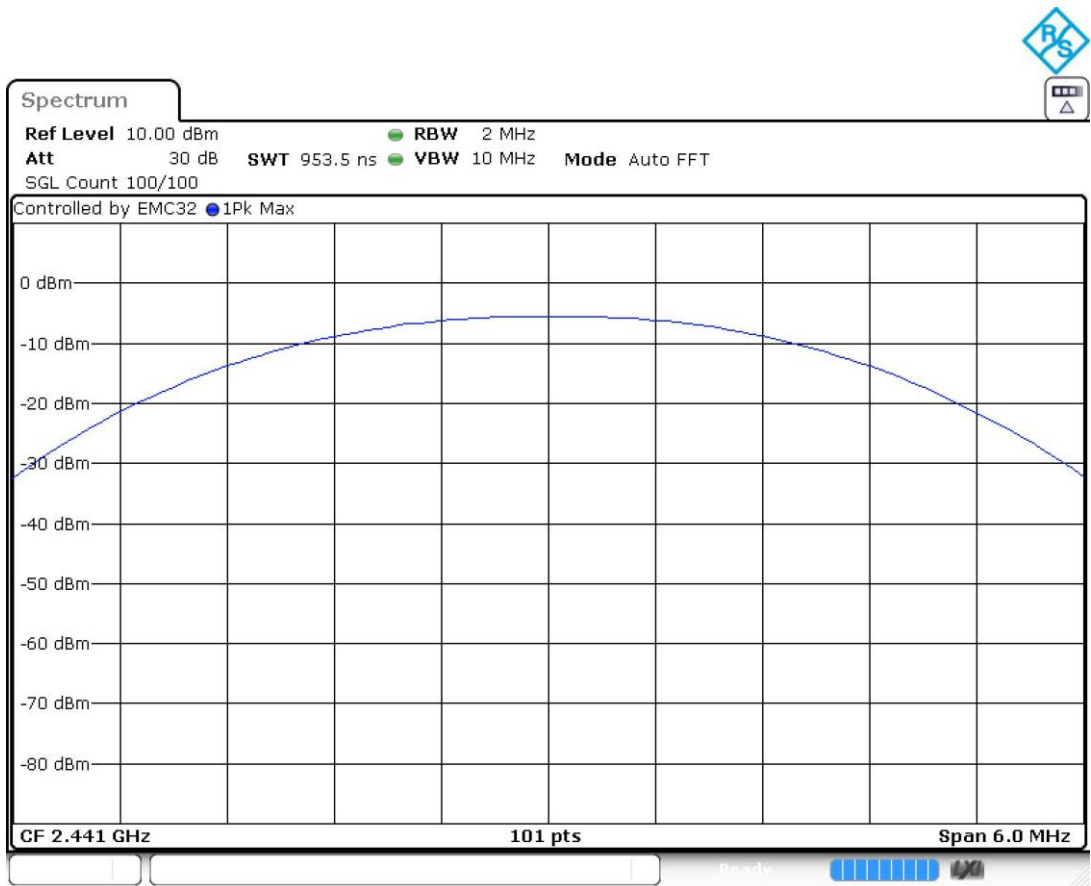
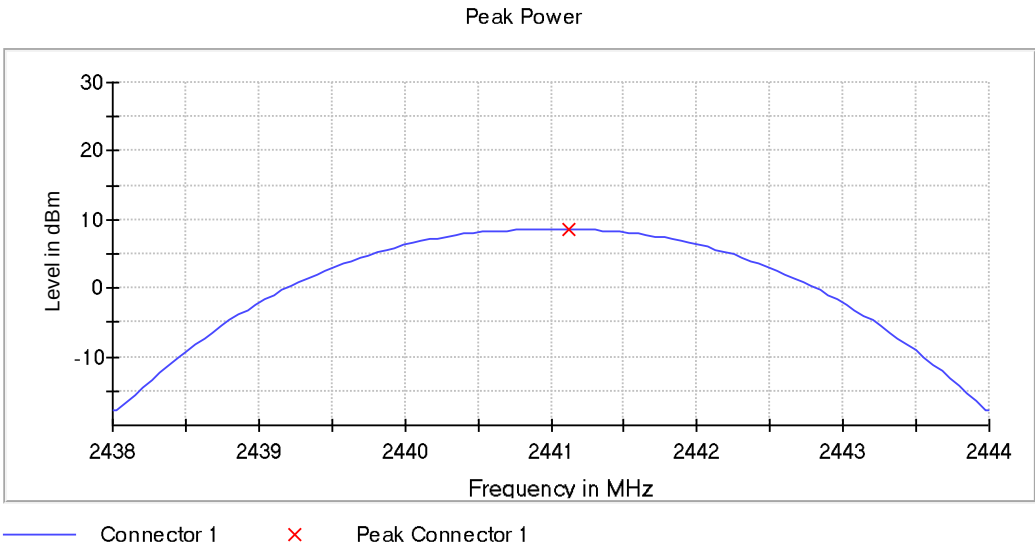
### Verdict

Pass

Attachments

Frequency MHz = 2441.00000  
Bandwidth MHz = 1            Modulation = BT (GFSK 1-DH5)  
Number of Transmission Chains = 1            Active Port = 1

Images:



## Appendix B: Test results. Bluetooth Low Energy

# INDEX

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TEST CONDITIONS .....16

TEST CASES DETAILS.....17

RSS-247 5.4 (d) / FCC 15.247 (b) (1) [Avcp] Maximum Average Conducted output Power .....17

# TEST CONDITIONS

(\*): Data provided by the client.

POWER SUPPLY (\*):

Vnominal: 7.4 V DC  
Type of Power Supply: Battery

ANTENNA (\*):

Type of Antenna: Internal PIFA antenna  
Maximum Declared Antenna Gain: +2.5 dBi

CONDUCTED TEST FREQUENCIES (\*):

Middle Channel: 2480 MHz

MODULATION (\*):

BTLE 1Mbit/s GFSK

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 using a low loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



## TEST CASES DETAILS

### RSS-247 5.4. (d) / FCC 15.247 (b) Maximum output power and antenna gain

**Limits**

For systems using digital modulation in the 2400-2483.5 MHz band: 1 watt (30 dBm).

The e.i.r.p. shall not exceed 4 W (RSS-247).

Modulation: BLE 5.0 (GFSK 1 Mbit/s)

**Results**

The maximum peak conducted output power level in the fundamental emission was measured using the method according to point 11.9.1.1 "RBW ≥ DTS bandwidth" of ANSI C.63.10-2013.

The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power.

Maximum Declared Antenna Gain: 2.5 dBi

| Freq (MHz) | Equipment                         | BW (MHz) | # of Tx Chains | Port | Max RF Output power (dBm) | Max E.I.R.P. (dBm) |
|------------|-----------------------------------|----------|----------------|------|---------------------------|--------------------|
| 2480.00000 | Digital Transmission System (DTS) | 1        | 1              | 1    | 4.67                      | 7.17               |

**Verdict**

Pass

## Attachments

Frequency MHz = 2480.00000

Bandwidth MHz = 1 Modulation = BLE 5.0 (GFSK 1 Mbit/s)

Number of Transmission Chains = 1 Active Port = 1

## Images:

