

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT



**EUT Description:** BLE Module  
**Applicant:** Raytac Corp.  
8F, No.788-1, Zhongzheng Rd., Zhonghe Dist., New Taipei  
City, 235, Taiwan  
**Manufacturer:** Raytac Corp.  
8F, No.788-1, Zhongzheng Rd., Zhonghe Dist., New Taipei  
City, 235, Taiwan  
**Brand Name:** Raytac  
**Model No./ISED HVIN:** MDBT42V  
**Family Model No.** MDBT42V-P  
**/Family ISED HVIN:**  
**Model Difference:** MDBT42V use chip antenna  
MDBT42V-P use PCB antenna  
**ISED PMN:** MDBT42V  
**Report Number:** TERF2608002771E2  
**FCC ID** SH6MDBT42V  
**IC:** 8017A-MDBT42V  
**Date of EUT Received:** August 05, 2026  
**Date of Test:** August 07, 2026 ~ August 27, 2026  
**Issue Date:** September 18, 2026

Approved By

Arno Hsieh

Arno Hsieh

## We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 and the energy emitted by the sample EUT comply with FCC rule part §15.247, ISED RSS-247.

The results of this report relate only to the sample identified in this report.

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## Revision History

| Report Number    | Revision | Description                       | Issue Date         | Revised By | Remark |
|------------------|----------|-----------------------------------|--------------------|------------|--------|
| TERF2608002771E2 | 00       | Add component and layout modified | September 18, 2026 | Susan Lin  |        |
|                  |          |                                   |                    |            |        |
|                  |          |                                   |                    |            |        |
|                  |          |                                   |                    |            |        |
|                  |          |                                   |                    |            |        |
|                  |          |                                   |                    |            |        |
|                  |          |                                   |                    |            |        |

**Note:**

- 1、The remark "\*" indicates modification of the report upon requests from certification body.
- 2、Variant information of model numbers is provided by the applicant, test results of this report are applicable to the sample EUT(s) received.

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## 1 GENERAL INFORMATION

### 1.1 Equipment Under Test (EUT)

|                                       |                                                       |
|---------------------------------------|-------------------------------------------------------|
| EUT Description                       | BLE Module                                            |
| Brand Name                            | Raytac                                                |
| Model No.<br>/ISED HVIN               | MDBT42V                                               |
| Family Model No.<br>/Family ISED HVIN | MDBT42V-P                                             |
| Model Difference                      | MDBT42V use chip antenna<br>MDBT42V-P use PCB antenna |
| Firmware Version                      | 1                                                     |
| Power Supply                          | 3Vdc                                                  |
| Test Software<br>(Name/Version)       | default                                               |

### 1.2 RF Specification

|                  |                |
|------------------|----------------|
| Radio Technology | BLE            |
| Frequency Range  | 2402 ~ 2480MHz |
| Channel number   | 40 channels    |
| Modulation type  | GFSK           |

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### 1.3 Antenna Designation

| Ant. Type | Brand  | Model No. | Freq. (MHz) | Peak Gain(dBi) |
|-----------|--------|-----------|-------------|----------------|
| Chip      | Raytac | MDBT42V   | 2400~2483.5 | -1.12          |
| PCB       | Raytac | MDBT42V-P | 2400~2483.5 | -3.81          |

Note:

1. Pre-scanned was done on the above antennas, measurements were demonstrated by using the antenna with the highest gain as the worst case scenarios.
2. The antenna information is provided by the applicant. The laboratory does not verify the accuracy of this information, and all test results related to antenna characteristics are based solely on the data supplied. Responsibility for the authenticity and accuracy of these specifications rests entirely with the party who provided the information.
3. The antenna complies with part 15.203 requirement and no consideration of replacement. Please see EUT photo for details.

### 1.4 Operating Frequencies

| 2400~2483.5 MHz |          |      |          |      |          |      |          |
|-----------------|----------|------|----------|------|----------|------|----------|
| Item            | Freq.    | Item | Freq.    | Item | Freq.    | Item | Freq.    |
| 0               | 2402 MHz | 1    | 2404 MHz | 2    | 2406 MHz | 3    | 2408 MHz |
| 4               | 2410 MHz | 5    | 2412 MHz | 6    | 2414 MHz | 7    | 2416 MHz |
| 8               | 2418 MHz | 9    | 2420 MHz | 10   | 2422 MHz | 11   | 2424 MHz |
| 12              | 2426 MHz | 13   | 2428 MHz | 14   | 2430 MHz | 15   | 2432 MHz |
| 16              | 2434 MHz | 17   | 2436 MHz | 18   | 2438 MHz | 19   | 2440 MHz |
| 20              | 2442 MHz | 21   | 2444 MHz | 22   | 2446 MHz | 23   | 2448 MHz |
| 24              | 2450 MHz | 25   | 2452 MHz | 26   | 2454 MHz | 27   | 2456 MHz |
| 28              | 2458 MHz | 29   | 2460 MHz | 30   | 2462 MHz | 31   | 2464 MHz |
| 32              | 2466 MHz | 33   | 2468 MHz | 34   | 2470 MHz | 35   | 2472 MHz |
| 36              | 2474 MHz | 37   | 2476 MHz | 38   | 2478 MHz | 39   | 2480 MHz |

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### 1.5 EUT Availability and The Worst Test Modes

1. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
2. The field strength of radiation emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.
3. Investigation has been done on all the possible configurations for searching the worst case. The given UE is pre-scanned among modes below.

| TRANSMIT RADIATED EMISSION TEST (BELOW 1 GHz) |                   |                |                  |
|-----------------------------------------------|-------------------|----------------|------------------|
| MODE                                          | AVAILABLE CHANNEL | TESTED CHANNEL | DATA RATE (Mbps) |
| Bluetooth LE                                  | 0 to 39           | 20             | 1                |

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## 2 SUMMARY OF TEST RESULTS

| FCC Rules  | ISED Rules     | Description Of Test | Result    |
|------------|----------------|---------------------|-----------|
| §15.205    | RSS-247 §6.6   | Unwanted Emission   | Compliant |
| §15.209    | RSS-Gen §7.4.3 |                     |           |
| §15.247(d) | RSS-Gen §7.5   |                     |           |

### 2.1 Test Methodology of Applied Standards

1. FCC Part 15, Subpart C §15.247
2. ANSI C63.10:2020
3. ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
4. FCC KDB 558074 D01 15.247 Meas Guidance v05r02
5. ISED RSS-247, Issue 4, Jul. 24, 2025
6. ISED RSS-Gen, Issue 6, Jul. 30, 2026

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## 2.2 Measurement Uncertainty

| Test Items                       | Uncertainty |
|----------------------------------|-------------|
| AC Power Line Conducted Emission | +/- 1.61 dB |
| Output Power measurement         | +/- 0.97 dB |
| Emission Bandwidth               | +/- 1.38 Hz |
| Conducted emission measurement   | +/- 0.77 dB |
| Peak Power Density               | +/- 0.61 dB |
| Temperature                      | +/- 0.60 °C |
| Humidity                         | +/- 3.00 %  |
| DC / AC Power Source             | +/- 1.00 %  |

| Radiated Spurious Emission Measurement Uncertainty |             |                 |
|----------------------------------------------------|-------------|-----------------|
| Polarization: Vertical                             | +/- 1.89 dB | 9kHz - 30MHz    |
|                                                    | +/- 4.10 dB | 30MHz - 1000MHz |
|                                                    | +/- 3.41 dB | 1GHz - 18GHz    |
|                                                    | +/- 3.89 dB | 18GHz - 40GHz   |
| Polarization: Horizontal                           | +/- 1.89 dB | 9kHz - 30MHz    |
|                                                    | +/- 4.10 dB | 30MHz - 1000MHz |
|                                                    | +/- 3.41 dB | 1GHz - 18GHz    |
|                                                    | +/- 3.89 dB | 18GHz - 40GHz   |
| Radiated Spurious Emission                         | +/- 2.00 dB | 33GHz - 50GHz   |
|                                                    | +/- 1.59 dB | 50GHz - 60GHz   |
|                                                    | +/- 1.71 dB | 60GHz - 90GHz   |
|                                                    | +/- 1.64 dB | 90GHz - 140GHz  |
|                                                    | +/- 3.84 dB | 140GHz - 220GHz |

### Note

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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## 2.3 Test Facility

| Laboratory                                            | Test Site Address                                                                                       | Test Site Name                                                                                                                                     | FCC Designation number / Registration Number | IC CAB identifier / Company Number |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------|
| SGS Taiwan Ltd.<br>Central RF Lab.<br>(TAF code 3702) | No.134, Wu Kung Road,<br>New Taipei Industrial Park,<br>Wuku District, New Taipei<br>City, Taiwan 24803 | SAC 1 / SAC 2 / SAC 3<br>Conduction 1 / Conducted 1<br>Conducted 2 / Conducted 3<br>Conducted 4 / Conducted 5<br>Conducted 6 / FAC 1               | TW0027 /<br>891563                           | TW3702 /<br>4620A                  |
| SGS Taiwan Ltd.<br>Central RF Lab.<br>(TAF code 3702) | No.2, Keji 1st Rd, Guishan<br>District, Taoyuan City,<br>Taiwan 333                                     | SAC C / SAC D / SAC G<br>Conduction C/ Conducted A<br>Conducted B / Conducted C<br>Conducted D / Conducted E<br>Conducted F / Conducted G<br>FAC A | TW0028 /<br>200037                           | TW3702 /<br>4620E                  |

| Measurement | Test Site Name | Test Engineer | EUT S/N | Test Environment        | Test Date                  |
|-------------|----------------|---------------|---------|-------------------------|----------------------------|
| Radiated    | SAC C          | Alex Li       | N/A     | 21.5~23.0°C /<br>68~69% | 2026/08/19 ~<br>2026/08/27 |

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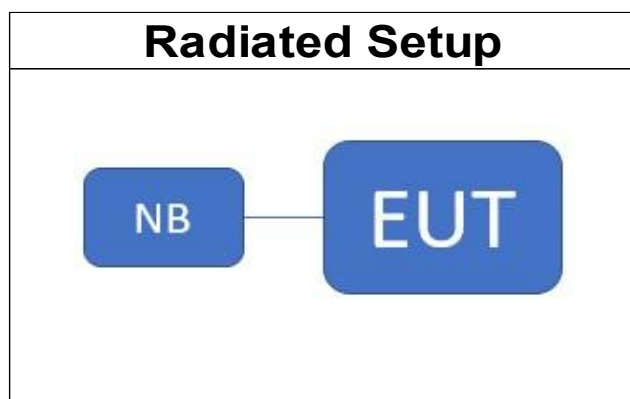
### 3 CONTROL UNIT(S) AND PERIPHERAL(S)

#### 3.1 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

#### 3.2 Diagrams



#### 3.3 List

##### 3.3.1 Radiated Setup

| Radiated Emission Test Site: SAC C |        |              |               |                           |                          |
|------------------------------------|--------|--------------|---------------|---------------------------|--------------------------|
| EQUIPMENT TYPE                     | MFR    | MODEL NUMBER | SERIAL NUMBER | LAST CAL.<br>(mm/dd/yyyy) | CAL DUE.<br>(mm/dd/yyyy) |
| Notebook                           | Lenovo | T470         | P0001293      | N/A                       | N/A                      |
| USB Cable                          | Ugreen | US132        | N/A           | N/A                       | N/A                      |

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## 4 TEST INSTRUMENT

### 4.1 Radiated Measurement

| Radiated Emission Test Site: SAC C |                      |                                                                 |                              |                           |                          |
|------------------------------------|----------------------|-----------------------------------------------------------------|------------------------------|---------------------------|--------------------------|
| EQUIPMENT TYPE                     | MFR                  | MODEL NUMBER                                                    | SERIAL NUMBER                | LAST CAL.<br>(mm/dd/yyyy) | CAL DUE.<br>(mm/dd/yyyy) |
| 3m Site NSA                        | SGS                  | 966 chamber C                                                   | N/A                          | 03/02/2026                | 03/01/2027               |
| Broadband Antenna                  | SCHWARZBECK          | VULB 9168                                                       | 9168-300                     | 11/14/2025                | 11/13/2026               |
| Coaxial Cable                      | EMCI+Huber<br>Suhner | RG<br>214/U+EMC104-<br>SM-SM-<br>6000+EMC105-SM-<br>SM-12000+15 | W13.01+150813+2<br>310002+15 | 11/13/2025                | 11/12/2026               |
| 1G Low pass Filter                 | Woken                | EWI-56-0019                                                     | RF156                        | 11/13/2025                | 11/12/2026               |
| EMI Test Receiver                  | R&S                  | ESU 40                                                          | 100363                       | 04/29/2026                | 04/28/2027               |
| Pre-Amplifier                      | EMC Instruments      | EMC9135                                                         | 980234                       | 11/13/2025                | 11/12/2026               |
| Spectrum Analyzer                  | KEYSIGHT             | N9010B                                                          | MY63440390                   | 02/02/2026                | 02/01/2027               |
| Test Software                      | audix                | e3                                                              | E3 210616 SGS<br>Ver.9 ( C ) | N.C.R                     | N.C.R                    |

NOTE: N.C.R refers to Not Calibrated Required.

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## 5 REGULATORY REQUIREMENTS

### 5.1 Unwanted Emissions

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

In addition, radiated emissions which fall in the restricted bands must also comply with the applicable radiated emission limits as defined in the general emission limit tables.

Moreover, for an intentional radiator operating below 10 GHz, the frequency range of measurements shall extend up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

| Frequency<br>(MHz) | Field strength<br>(microvolts/meter) | Distance<br>(meters) |
|--------------------|--------------------------------------|----------------------|
| 0.009-0.490        | 2400/F(kHz)                          | 300                  |
| 0.490-1.705        | 2400/F(kHz)                          | 30                   |
| 1.705-30           | 30                                   | 30                   |
| 30-88              | 100                                  | 3                    |
| 88-216             | 150                                  | 3                    |
| 216-960            | 200                                  | 3                    |
| Above 960          | 500                                  | 3                    |

Note: The lower limit shall apply at the transition frequencies.

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## 6 TEST CONFIGURATION

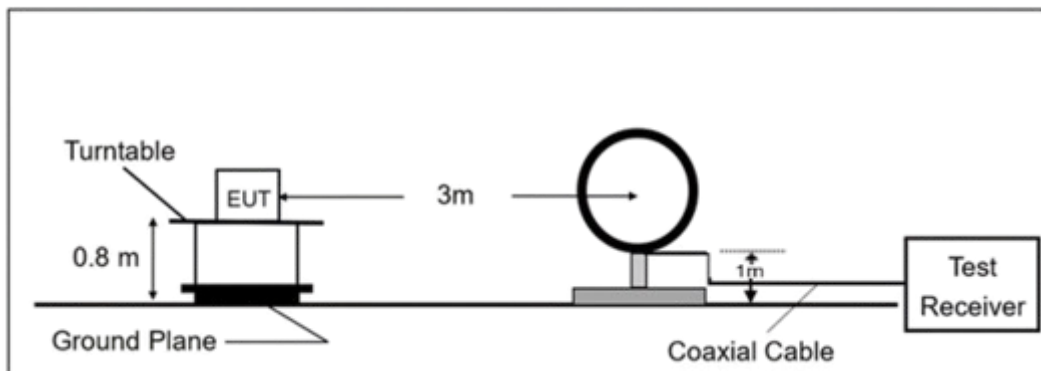
### 6.1 Unwanted Emissions

For Measurements From 9 kHz to 30 MHz

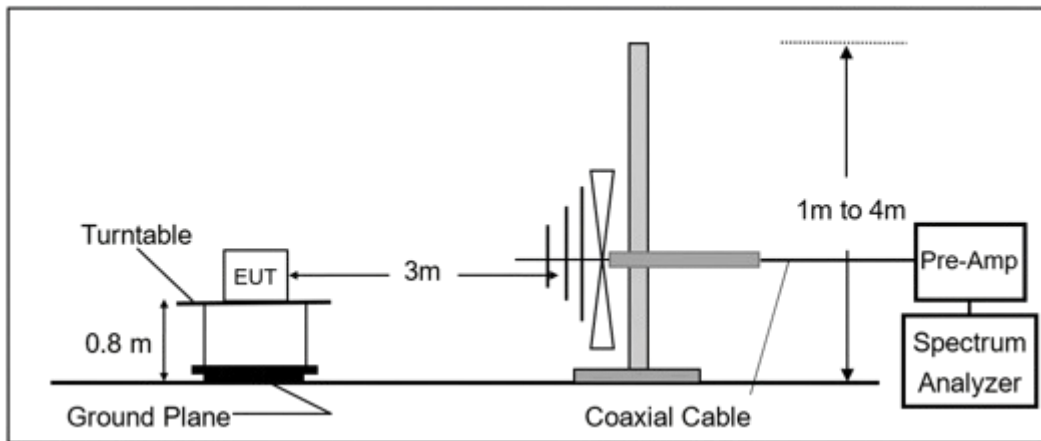
Radiated emission below 30MHz is measured in a 9m\*6m\*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

Radiated Emission Test Set-Up, Frequency Below 30MHz.



Radiated Emission Test Set-Up, Frequency From 30MHz to 1000MHz.



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台灣檢驗科技股份有限公司

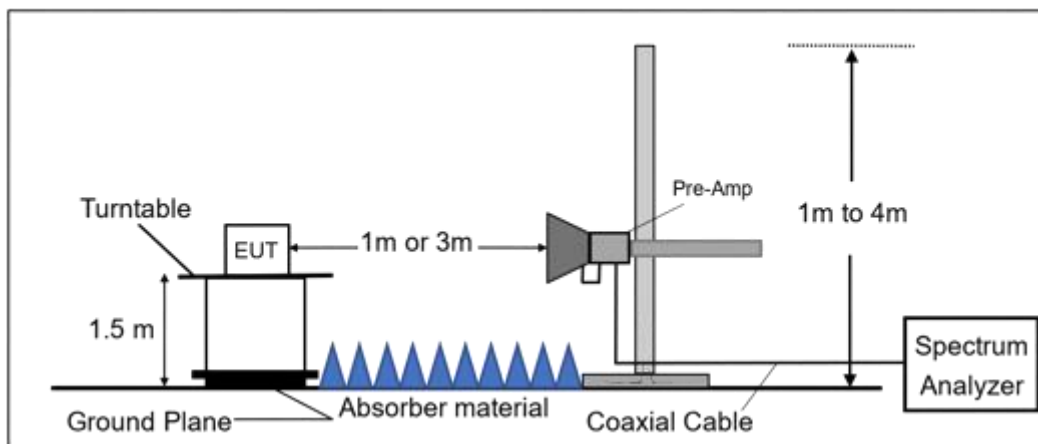
t (886-2) 2299-3279

f (886-2) 2298-0488

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## Radiated Emission Test Set-Up, Frequency Above 1GHz.



1. The testing was performed in accordance with the applicable radiated emission measurement procedure.
2. The EUT was placed on a turntable at a height of 0.8 m for frequencies below 1 GHz and 1.5 m for frequencies above 1 GHz.
3. The turntable was rotated 360 degrees to determine the position of the maximum emission level.
4. The EUT was positioned 3 meters away from the receiving antenna, which was varied in height from 1 m to 4 m to locate the highest emissions.
5. The spectrum analyzer was set with RBW = 100 kHz and VBW = 300 kHz, using a Peak detector for frequencies between 30 MHz and 1 GHz.
6. A receiver mode with RBW = 120 kHz was used for Quasi-Peak (QP) measurements between 30 MHz and 1 GHz.
7. For frequencies above 1 GHz, the spectrum analyzer was set with RBW = 1 MHz, VBW = 3 MHz, and Detector = Peak for maximum emission measurements.
8. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz, Detector= RMS correction factor is  $[10 \log (1 / D)]$  for Average Emission measurements at frequency above 1 GHz when  $D \geq 98\%$ . If a specific emission is demonstrated to be continuous ( $D \geq 98\%$ ) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission, where D is the duty cycle.
9. Set the spectrum analyzer as RBW=1 MHz, VBW  $\geq 1/T$ , Detector= Peak when  $D < 98\%$  for Average Emission Measurements at frequency above 1 GHz.
10. The average value of pulsed emissions is determined using the duty cycle correction method, applying a correction factor of  $20 \times \log_{10} (T_{on} / 100 \text{ ms})$ .
11. When measuring radiated emissions above 1 GHz, the receiving antenna was maintained within the "cone of radiation" and pointed at the emission source in both azimuth and elevation, with polarization oriented for maximum response, ensuring it remained within the 3 dB illumination beamwidth of the measurement antenna.
12. The six highest emissions were fully maximized using the above procedures to ensure EUT compliance.
13. Each emission was further maximized by changing the receiving antenna polarization between horizontal and vertical.
14. Repeat the above procedures until all default test channels (low, middle, and high)

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are measured.

Note: Emissions from 9 kHz to 30 MHz were pre-scanned and found to be at least 20 dB below the applicable limits, and are therefore not reported.

### 6.1.1 Field Strength Calculation

The field strength is calculated by adding the antenna factor and cable loss, then subtracting the amplifier gain and any applicable duty cycle correction factor from the measured reading. The basic equation and an example calculation are as follows:

$$FS = RA + AF + CL - AG$$

Where:

FS = Field Strength (dB $\mu$ V/m)

RA = Reading Amplitude (dB $\mu$ V)

AF = Antenna Factor (dB/m)

CL = Cable Loss (dB)

AG = Amplifier Gain (dB)

The emission limit is expressed in dB $\mu$ V/m, which corresponds to the logarithmic conversion of  $20 \times \log_{10} (\mu\text{V/m})$ .

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## 7 TEST RESULTS

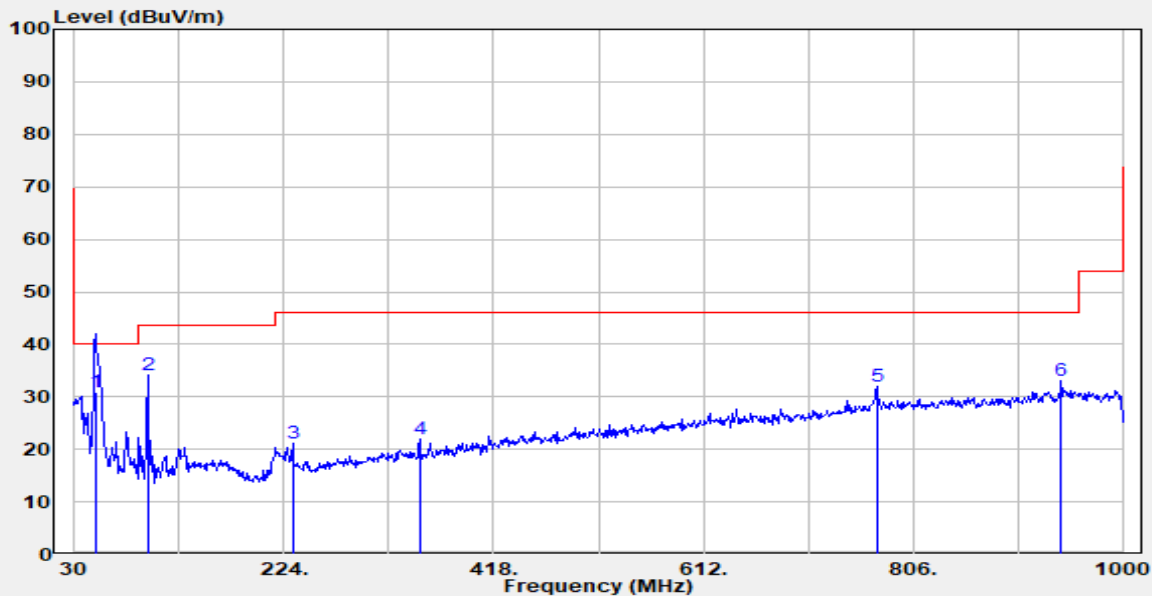
### 7.1 Unwanted Emissions

#### 7.1.1 Spurious Emission

##### MDBT42V

Report Number :TERF2608002771E2  
 Operation Mode :BLE 1M  
 Test Frequency :2442 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC C  
 Test Date :2026-08-27  
 Temp./Humi. :23.0°C/68%  
 Antenna Pol. :Vertical  
 Engineer :Alex Li



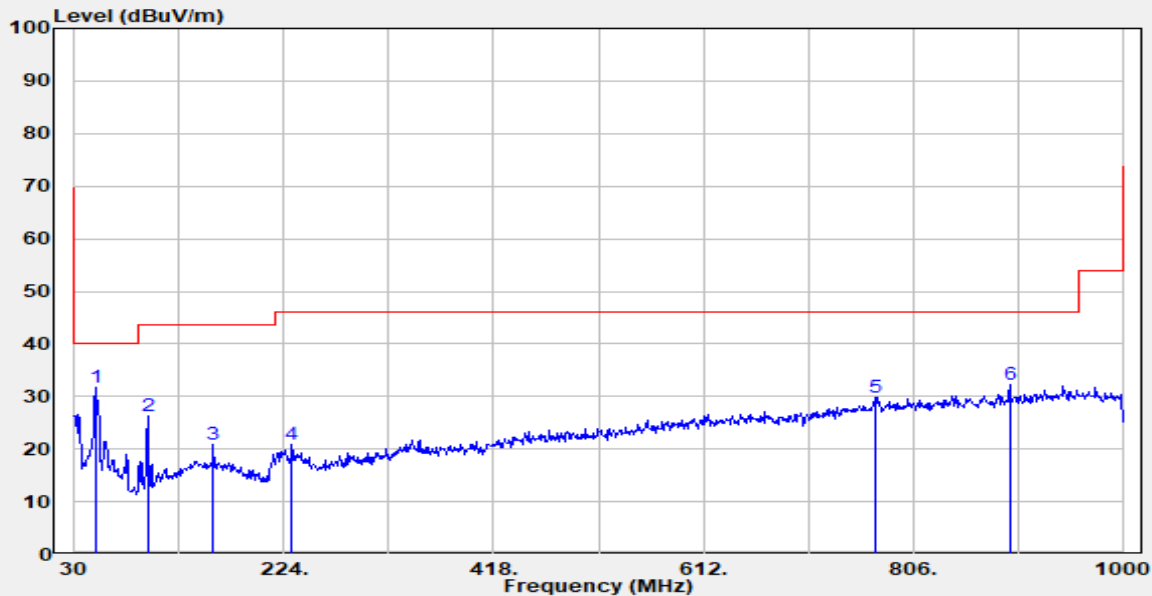
| Freq.<br>MHz | Detector<br>Mode | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 49.40        | QP               | 43.80                             | -12.85       | 30.95                  | 40.00                  | -9.05        |
| 97.90        | Peak             | 52.00                             | -17.80       | 34.20                  | 43.50                  | -9.30        |
| 231.76       | Peak             | 35.36                             | -14.16       | 21.20                  | 46.00                  | -24.80       |
| 349.13       | Peak             | 32.28                             | -10.34       | 21.94                  | 46.00                  | -24.06       |
| 773.02       | Peak             | 32.39                             | -0.55        | 31.84                  | 46.00                  | -14.16       |
| 943.74       | Peak             | 30.83                             | 2.10         | 32.93                  | 46.00                  | -13.07       |

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Report Number :TERF2608002771E2  
 Operation Mode :BLE 1M  
 Test Frequency :2442 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC C  
 Test Date :2026-08-27  
 Temp./Humi. :23.0°C/68%  
 Antenna Pol. :Horizontal  
 Engineer :Alex Li



| Freq.  | Detector | Spectrum      | Factor | Actual | Limit  | Margin |
|--------|----------|---------------|--------|--------|--------|--------|
| MHz    | Mode     | Reading Level |        | FS     | @3m    |        |
|        | PK/QP/AV | dBμV          | dB     | dBμV/m | dBμV/m | dB     |
| 49.40  | Peak     | 44.68         | -12.85 | 31.83  | 40.00  | -8.17  |
| 97.90  | Peak     | 44.12         | -17.80 | 26.32  | 43.50  | -17.18 |
| 158.04 | Peak     | 33.62         | -12.73 | 20.89  | 43.50  | -22.61 |
| 230.79 | Peak     | 35.11         | -14.25 | 20.86  | 46.00  | -25.14 |
| 771.08 | Peak     | 30.45         | -0.57  | 29.88  | 46.00  | -16.12 |
| 896.21 | Peak     | 31.07         | 1.06   | 32.13  | 46.00  | -13.87 |

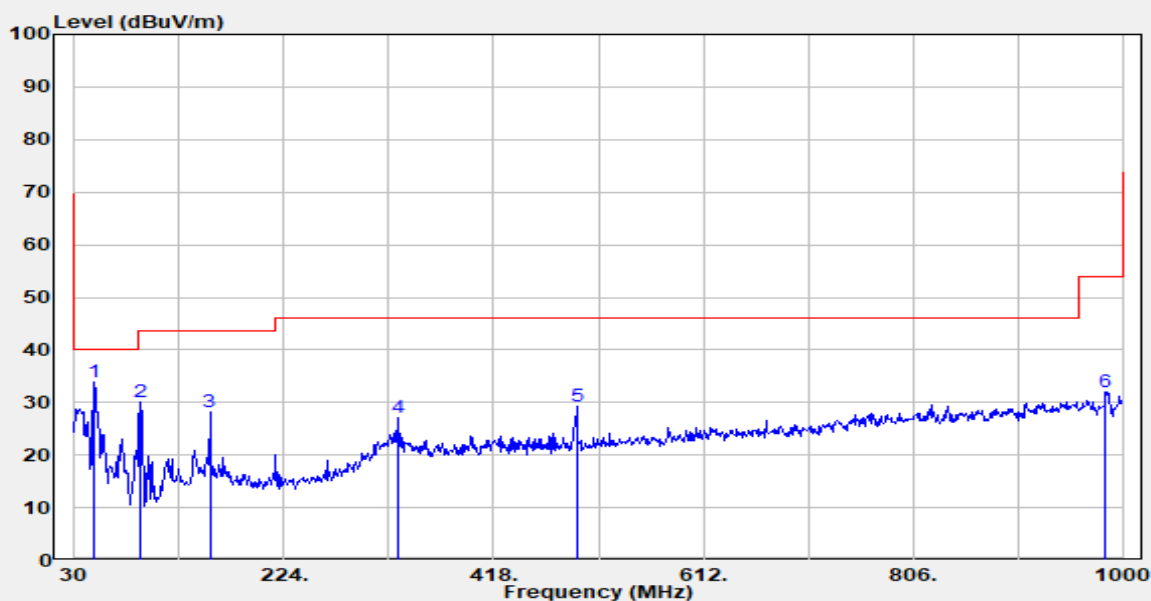
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**MDBT42V-P**

Report Number :TERF2608002771E2  
 Operation Mode :BLE 1M  
 Test Frequency :2442 MHz  
 Test Mode :Tx  
 EUT Pol :E2 Plane

Test Site :SAC C  
 Test Date :2026-08-19  
 Temp./Humi. :21.5°C/69%  
 Antenna Pol. :Vertical  
 Engineer :Alex Li



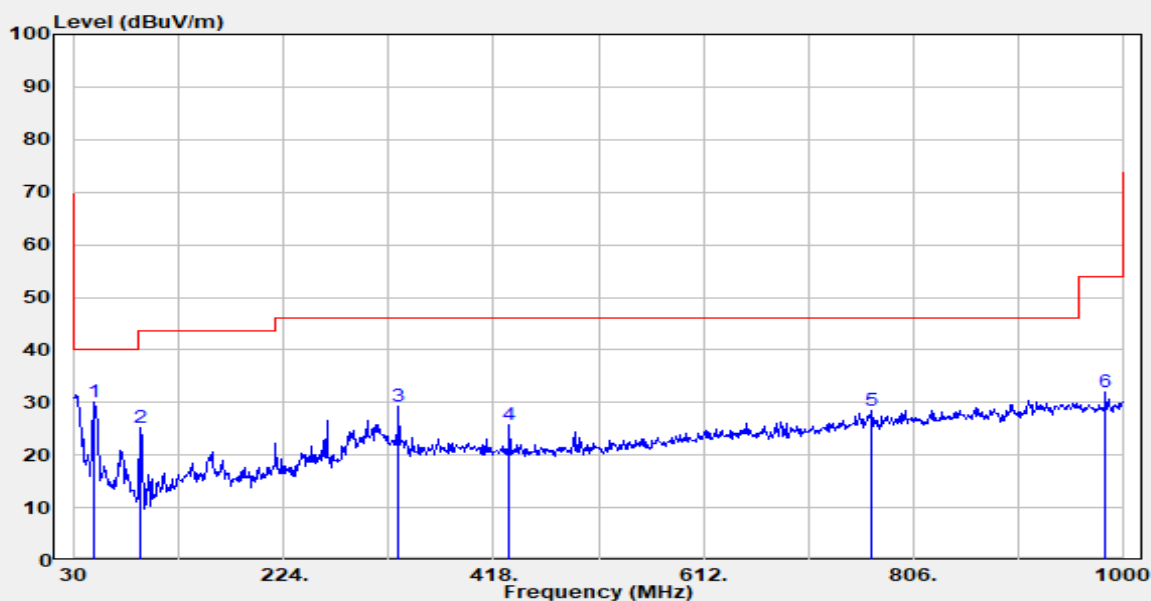
| Freq.   | Detector | Spectrum      | Factor | Actual       | Limit        | Margin |
|---------|----------|---------------|--------|--------------|--------------|--------|
| MHz     | Mode     | Reading Level |        | FS           | @3m          |        |
|         | PK/QP/AV | dB $\mu$ V    | dB     | dB $\mu$ V/m | dB $\mu$ V/m | dB     |
| 48.430  | Peak     | 51.01         | -17.24 | 33.77        | 40.00        | -6.23  |
| 91.110  | Peak     | 53.19         | -23.01 | 30.19        | 43.50        | -13.31 |
| 155.130 | Peak     | 44.56         | -16.38 | 28.17        | 43.50        | -15.33 |
| 329.730 | Peak     | 42.00         | -14.92 | 27.08        | 46.00        | -18.92 |
| 494.630 | Peak     | 40.61         | -11.29 | 29.32        | 46.00        | -16.68 |
| 984.480 | Peak     | 35.74         | -3.82  | 31.92        | 54.00        | -22.08 |

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Test Frequency :2442 MHz  
Test Mode :Tx  
EUT Pol :E2 Plane

Test Site :SAC C  
Test Date :2026-08-19  
Temp./Humi. :21.5°C/69%  
Antenna Pol. :Horizontal  
Engineer :Alex Li



| Freq.   | Detector | Spectrum      | Factor | Actual       | Limit        | Margin |
|---------|----------|---------------|--------|--------------|--------------|--------|
| MHz     | Mode     | Reading Level |        | FS           | @3m          |        |
|         | PK/QP/AV | dB $\mu$ V    | dB     | dB $\mu$ V/m | dB $\mu$ V/m | dB     |
| 48.430  | Peak     | 47.22         | -17.24 | 29.98        | 40.00        | -10.02 |
| 91.110  | Peak     | 48.08         | -23.01 | 25.07        | 43.50        | -18.43 |
| 329.730 | Peak     | 44.30         | -14.92 | 29.38        | 46.00        | -16.62 |
| 432.550 | Peak     | 37.93         | -12.28 | 25.64        | 46.00        | -20.36 |
| 767.200 | Peak     | 34.79         | -6.26  | 28.53        | 46.00        | -17.47 |
| 984.480 | Peak     | 35.80         | -3.82  | 31.98        | 54.00        | -22.02 |

~ End of Report ~

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t (886-2) 2299-3279

f (886-2) 2298-0488

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