# FCC Radio Test Report

## FCC ID: 2AF82-FHD200

| | | |
|---|---|---|
| **Report No.** | : | BTL-FCCP-2-2104T005D |
| **Equipment** | : | Box PC |
| **Model Name** | : | FHD-200 |
| **Brand Name** | : | Qbic |
| **Applicant** | : | Qbic Technology Co., Ltd. |
| **Address** | : | 26F.-12, NO.99, SEC. 1, XINTAI 5TH RD., XIZHI DIST., NEW TAIPEI CITY 22175, TAIWAN |
| **Radio Function** | : | Bluetooth Low Energy |
| **FCC Rule Part(s)** | : | FCC CFR Title 47, Part 15, Subpart C (15.247) |
| **Measurement Procedure(s)** | : | ANSI C63.10-2013 |
| **Date of Receipt** | : | 2024/5/28 |
| **Date of Test** | : | 2024/6/24 ~ 2024/7/26 |
| **Issued Date** | : | 2024/8/9 |

The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

**Prepared by** : Brett Shen
Brett Shen, Engineer

**Approved by** : Jerry Chuang
Jerry Chuang, Supervisor

Testing Laboratory
0659

**BTL Inc.**
No.18, Ln. 171, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 114, Taiwan
Tel: +886-2-2657-3299 Fax: +886-2-2657-3331 Web: www.newbtl.com Service mail: btl_qa@newbtl.com

**Declaration**

**BTL** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

**BTL**'s reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** assumes no responsibility for the data provided by the Customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by **BTL**.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

**BTL**'s laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

**BTL** is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

**Limitation**

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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## REVISION HISTORY

| Report No. | Version | Description | Issued Date | Note |
|---|---|---|---|---|
| BTL-FCCP-2-2104T005D | R00 | Original Report. | 2024/8/9 | Valid |

# 1 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

| Standard(s) Section | Description | Test Result | Judgement | Remark |
|---|---|---|---|---|
| 15.207 | AC Power Line Conducted Emissions | APPENDIX A | Pass | ------ |
| 15.205<br>15.209<br>15.247(d) | Radiated Emissions | APPENDIX B<br>APPENDIX C<br>APPENDIX D | Pass | ------ |
| 15.247(a)(2) | Bandwidth | APPENDIX E | Pass | ------ |
| 15.247(b)(3) | Output Power | APPENDIX F | Pass | ------ |
| 15.247(e) | Power Spectral Density | APPENDIX G | Pass | ------ |
| 15.247(d) | Antenna conducted Spurious Emission | APPENDIX H | Pass | ------ |
| 15.203 | Antenna Requirement | ------ | Pass | ------ |

| Statement of Conformity |
|---|
| The statement of conformity is based on the binary decision rule according to IEC Guide 115 and ILAC G8 "simple acceptance" principle. Without considering measurement uncertainty, its specific risk is less than 50% PFA. (PFA: Probability of False Accept) |

NOTE:
(1) ”N/A” denotes test is not applicable in this Test Report.
(2) The report format version is TP.1.1.1.

### 1.1 TEST FACILITY

The test locations stated below are under the TAF Accreditation Number 0659.
The test location(s) used to collect the test data in this report are:
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)
☐ C05 ☐ CB08 ☐ CB11 ☐ SR10 ☒ SR11
No. 68-2, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)
☐ CB12 ☒ SR05
No. 72, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
(FCC DN: TW0659)
☐ C06 ☒ CB21 ☐ CB22

### 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**, where expanded uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k = 2**, providing a level of confidence of approximately **95 %**.

A. AC power line conducted emissions test:

| Test Site | Method | Measurement Frequency Range | U (dB) |
|---|---|---|---|
| SR05 | CISPR | 150 kHz ~ 30MHz | 3.44 |

B. Radiated emissions test :

| Test Site | Measurement Frequency Range | U (dB) |
|---|---|---|
| CB21 | 0.03 GHz ~ 0.2 GHz | 4.17 |
| | 0.2 GHz ~ 1 GHz | 4.72 |
| | 1 GHz ~ 6 GHz | 5.21 |
| | 6 GHz ~ 18 GHz | 5.51 |
| | 18 GHz ~ 26 GHz | 3.69 |
| | 26 GHz ~ 40 GHz | 4.23 |

C. Conducted test :

| Test Item | U (dB) |
|---|---|
| Occupied Bandwidth | 0.5334 |
| Output power | 0.3669 |
| Power Spectral Density | 0.6591 |
| Conducted Spurious emissions | 0.5416 |
| Conducted Band edges | 0.5348 |

NOTE:
Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

### 1.3 TEST ENVIRONMENT CONDITIONS

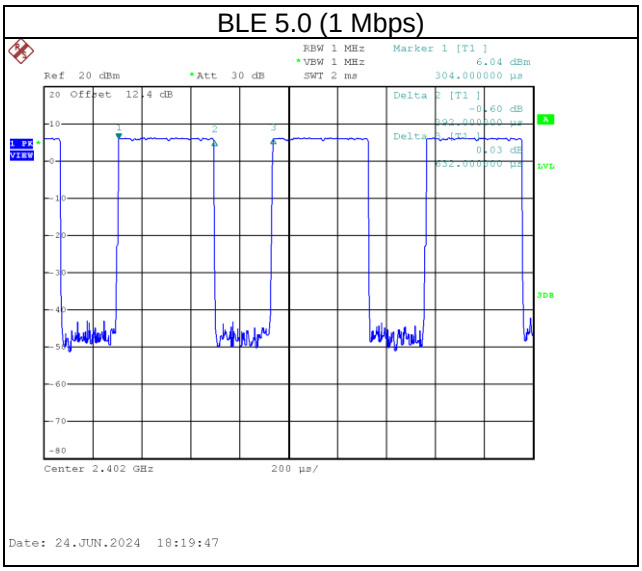
| Test Item | Environment Condition | Test Voltage | Tested by |
|---|---|---|---|
| AC Power Line Conducted Emissions | 22 °C, 50 % | AC 120V | Ken Lan |
| Radiated emissions below 1 GHz | Refer to data | AC 120V | Sean Huang |
| Radiated emissions above 1 GHz | Refer to data | AC 120V | Sean Huang |
| Bandwidth | 23 °C, 50 % | AC 120V | Ken Lan |
| Output Power | 23 °C, 50 % | AC 120V | Ken Lan |
| Power Spectral Density | 23 °C, 50 % | AC 120V | Ken Lan |
| Antenna conducted Spurious Emission | 23 °C, 50 % | AC 120V | Ken Lan |

## 1.4 DUTY CYCLE

If duty cycle is ≥ 98 %, duty factor is not required.
If duty cycle is < 98 %, duty factor shall be considered.

| Remark | Delta 2 | | | Delta 3 | On Time/Period | 10 log(1/Duty Cycle) |
|---|---|---|---|---|---|---|
| Mode | ON (ms) | Numbers (ON) | On Time (B) (ms) | Period (ON+OFF) (ms) | Duty Cycle (%) | Duty Factor (dB) |
| BLE 5.0 (1 Mbps) | 0.392 | 1 | 0.392 | 0.632 | 62.03% | 2.07 |

BLE 5.0 (1 Mbps)



# 2 GENERAL INFORMATION

## 2.1 DESCRIPTION OF EUT

| | |
|---|---|
| Equipment | Box PC |
| Model Name | FHD-200 |
| Brand Name | Qbic |
| Model Difference | N/A |
| Power Source | DC Voltage supplied from AC/DC adapter. |
| Power Rating | I/P: 100-240V~, 50-60Hz, 300mA<br>O/P: +5V, 2A MAX 10.0W |
| Products Covered | 1 * Power Adapter: PHIHONG /PSM10R-050<br>1 * VESA Mounting: QBIC /MBP0400X01G01<br>1 * Veicro Tie: 3M /NBP0400101O01<br>1 * Power Plug for US.CE.US.AUS: PHIHONG /KPAD01005PH01<br>1 * Antenna: Joymax /TWX-100BRS3B-1242 |
| Operation Band | 2400 MHz ~ 2483.5 MHz |
| Operation Frequency | 2402 MHz ~ 2480 MHz |
| Modulation Technology | GFSK |
| Transfer Rate | 1 Mbps |
| Output Power Max. | 6.65 dBm (0.0046 W) |
| Test Software Version | ADB |
| Test Model | FHD-200 |
| Sample Status | Engineering Sample |
| EUT Modification(s) | N/A |

NOTE:
(1) The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

(2) Channel List:

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 00 | 2402 | 20 | 2442 |
| 01 | 2404 | 21 | 2444 |
| 02 | 2406 | 22 | 2446 |
| 03 | 2408 | 23 | 2448 |
| 04 | 2410 | 24 | 2450 |
| 05 | 2412 | 25 | 2452 |
| 06 | 2414 | 26 | 2454 |
| 07 | 2416 | 27 | 2456 |
| 08 | 2418 | 28 | 2458 |
| 09 | 2420 | 29 | 2460 |
| 10 | 2422 | 30 | 2462 |
| 11 | 2424 | 31 | 2464 |
| 12 | 2426 | 32 | 2466 |
| 13 | 2428 | 33 | 2468 |
| 14 | 2430 | 34 | 2470 |
| 15 | 2432 | 35 | 2472 |
| 16 | 2434 | 36 | 2474 |
| 17 | 2436 | 37 | 2476 |
| 18 | 2438 | 38 | 2478 |
| 19 | 2440 | 39 | 2480 |

(3) Table for Filed Antenna:

| Antenna | Manufacture | Model name | Type | Connector | Frequency (MHz) | Gain (dBi) |
|---|---|---|---|---|---|---|
| 1 | Joymax | TWX-100BRS3B-1242 | Dipole | RP SMA Plug | 2400-2500 | 2.08 |
| | | | | | 5150-5250 | 4.05 |
| | | | | | 5555-5850 | 4.11 |

(4) The above Antenna information are derived from the antenna data sheet provided by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

## 2.2 TEST MODES

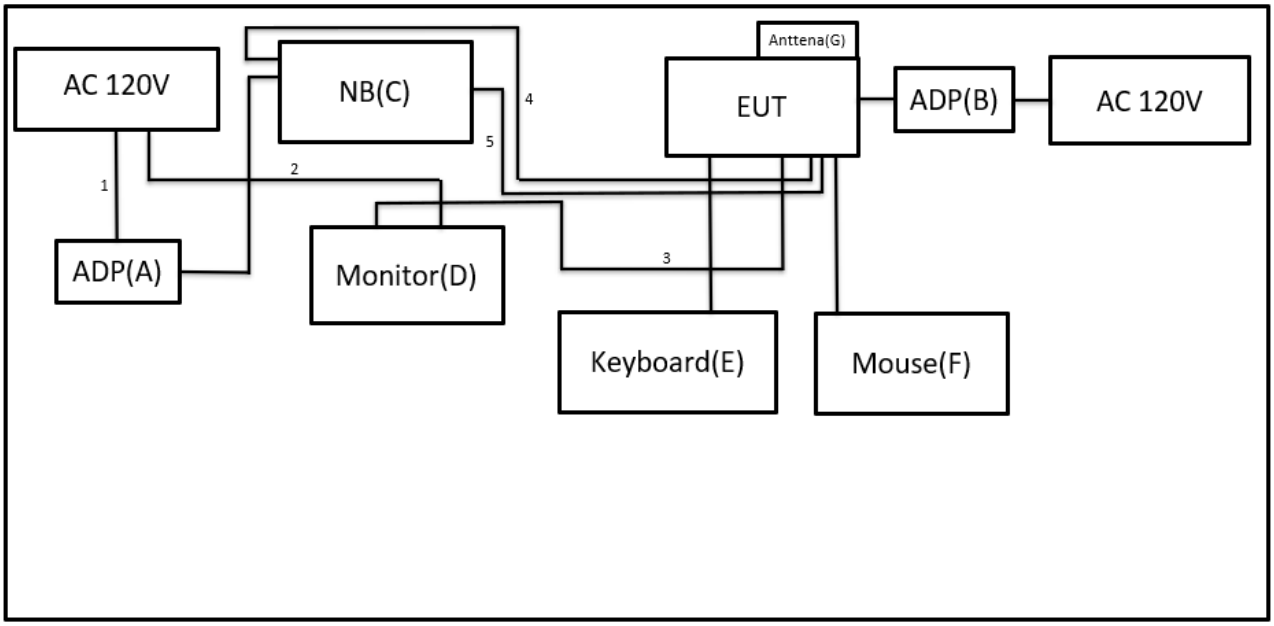
| Test Items | Test mode | Channel | Note |
|---|---|---|---|
| AC power line conducted emissions | Normal/Idle | - | - |
| Transmitter Radiated Emissions (below 1GHz) | 1 Mbps | 39 | - |
| Transmitter Radiated Emissions (above 1GHz) | 1 Mbps | 00/39 | Bandedge |
| | 1 Mbps | 00/19/39 | Harmonic |
| Transmitter Radiated Emissions (above 18GHz) | 1 Mbps | 39 | - |
| Bandwidth | 1 Mbps | 00/19/39 | - |
| Output Power | 1 Mbps | 00/19/39 | - |
| Power Spectral Density | 1 Mbps | 00/19/39 | - |
| Antenna conducted Spurious Emission | 1 Mbps | 00/19/39 | - |

NOTE:
(1) For radiated emission band edge test, both Vertical and Horizontal are evaluated, but only the worst case (Horizontal) is recorded.
(2) All X, Y and Z axes are evaluated, but only the worst case (X axis) is recorded.
(3) The EUT supports both BLE 4.0 and 5.0, we will pick BLE 5.0 for testing.

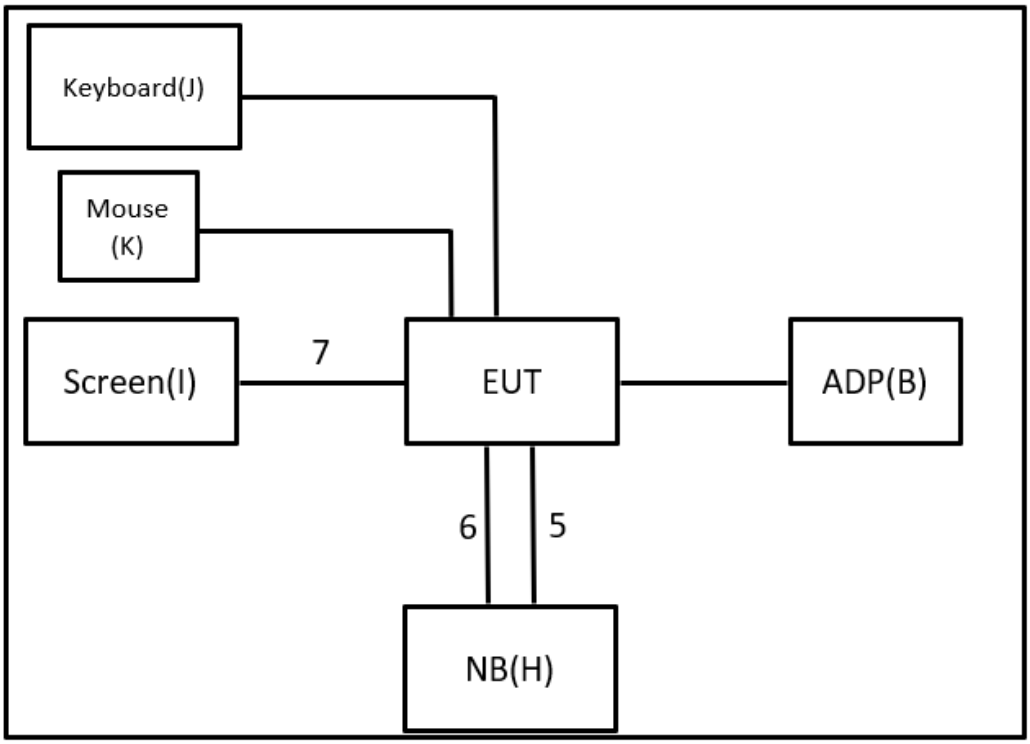
## 2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Equipment letters and Cable numbers refer to item numbers described in the tables of clause 2.4.

AC power line conducted emissions




Radiated Emissions



## 2.4 SUPPORT UNITS

| Item | Equipment | Brand | Model No. | Series No. | Remarks |
|---|---|---|---|---|---|
| A | ADP | HP | HSTNN-CA40 | N/A | Furnished by test lab. |
| B | ADP | PHIHONG | PSM10R-050 | N/A | Supplied by test requester |
| C | NB | HP | 240 G5 | N/A | Furnished by test lab. |
| D | Monitor | DELL | U2720Q | N/A | Furnished by test lab. |
| E | Keyborad | DELL | KB216t | N/A | Furnished by test lab. |
| F | Mouse | DELL | MOCZUL | N/A | Furnished by test lab. |
| G | Anttena | JOEMAX | TWX-100BRS3B-1242 | N/A | Supplied by test requester |
| H | NB | HP | TPN-I119 | N/A | Furnished by test lab. |
| I | Screen | DELL | U2720Q | N/A | Furnished by test lab. |
| J | Keyboard | Bloody | KB-8 | N/A | Furnished by test lab. |
| K | Mouse | Logitech | B100 | N/A | Furnished by test lab. |

| Item | Shielded | Ferrite Core | Length | Cable Type | Remarks |
|---|---|---|---|---|---|
| 1 | No | No | 1.8m | Power Cord | Furnished by test lab. |
| 2 | No | No | 1.8m | Power Cord | Furnished by test lab. |
| 3 | No | No | 1.5m | HDMI Cable | Furnished by test lab. |
| 4 | No | No | 0.5m | LAN Cable | Furnished by test lab. |
| 5 | No | No | 1.5m | USB - A to Micro-USB | Furnished by test lab. |
| 6 | No | No | 1m | LAN Cable | Furnished by test lab. |
| 7 | No | No | 1.8m | HDMI | Furnished by test lab. |

# 3 AC POWER LINE CONDUCTED EMISSIONS TEST

## 3.1 LIMIT

| Frequency (MHz) | Limit (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 - 0.5 | 66 - 56 * | 56 - 46 * |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

NOTE:
(1) The tighter limit applies at the band edges.
(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor (if use)
Margin Level = Measurement Value – Limit Value
Calculation example:

| Reading Level (dBμV) | | Correct Factor (dB) | | Measurement Value (dBμV) |
|---|---|---|---|---|
| 38.22 | + | 3.45 | = | 41.67 |

| Measurement Value (dBμV) | | Limit Value (dBμV) | | Margin Level (dB) |
|---|---|---|---|---|
| 41.67 | - | 60 | = | -18.33 |

The following table is the setting of the receiver.

| Receiver Parameter | Setting |
|---|---|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 KHz |

## 3.2 TEST PROCEDURE

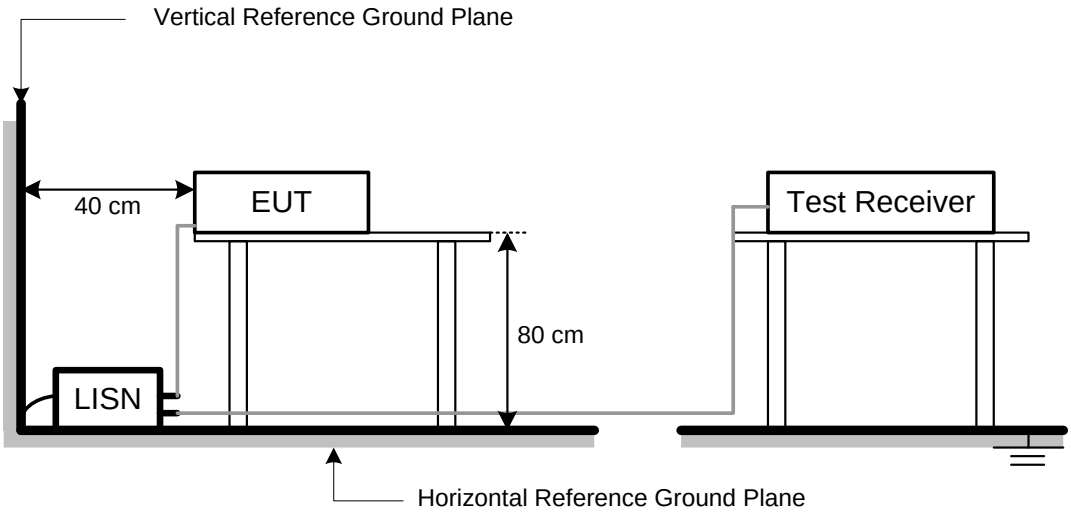
a. The EUT was placed 0.8 m above the horizontal ground plane with the EUT being connected to the power mains through a line impedance stabilization network (LISN).
All other support equipment were powered from an additional LISN(s).
The LISN provides 50 Ohm/50uH of impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle to keep the cable above 40 cm.
c. Excess I/O cables that are not connected to a peripheral shall be bundled in the center.
The end of the cable will be terminated, using the correct terminating impedance.
The overall length shall not exceed 1 m.
d. The LISN is spaced at least 80 cm from the nearest part of the EUT chassis.
e. For the actual test configuration, please refer to the related Item – EUT TEST PHOTO.

**NOTE:**
(1) In the results, each reading is marked as Peak, QP or AVG per the detector used.
BW=9 kHz (6 dB Bandwidth)
(2) All readings are Peak unless otherwise stated QP or AVG in column of Note. Both the QP and the AVG readings must be less than the limit for compliance.

### 3.3 DEVIATION FROM TEST STANDARD

No deviation.

### 3.4 TEST SETUP




### 3.5 TEST RESULT

Please refer to the APPENDIX A.

# 4 RADIATED EMISSIONS TEST

## 4.1 LIMIT

In case the emission fall within the restricted band specified on 15.205, then the 15.209 limit in the table below has to be followed.

LIMITS OF RADIATED EMISSIONS MEASUREMENT (9 kHz to 1000 MHz)

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009~0.490 | 2400/F(KHz) | 300 |
| 0.490~1.705 | 24000/F(KHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| 960~1000 | 500 | 3 |

LIMITS OF RADIATED EMISSIONS MEASUREMENT (Above 1000 MHz)

| Frequency (MHz) | Radiated Emissions (dBuV/m) | | Measurement Distance (meters) |
|---|---|---|---|
| | Peak | Average | |
| Above 1000 | 74 | 54 | 3 |

NOTE:
(1) The limit for radiated test was performed according to FCC CFR Title 47, Part 15, Subpart C.
(2) The tighter limit applies at the band edges.
(3) Emission level (dBuV/m)=20log Emission level (uV/m).
(4) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value
Calculation example:

| Reading Level (dBµV) | | Correct Factor (dB/m) | | Measurement Value (dBµV/m) |
|---|---|---|---|---|
| 41.91 | + | -8.36 | = | 33.55 |

| Measurement Value (dBµV/m) | | Limit Value (dBµV/m) | | Margin Level (dB) |
|---|---|---|---|---|
| 33.55 | - | 43.50 | = | -9.95 |

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RBW / VBW (Emission in restricted band) | 1MHz / 3MHz for Peak, 1MHz / 1/T for Average |

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9KHz~90KHz for PK/AVG detector |
| Start ~ Stop Frequency | 90KHz~110KHz for QP detector |
| Start ~ Stop Frequency | 110KHz~490KHz for PK/AVG detector |
| Start ~ Stop Frequency | 490KHz~30MHz for QP detector |
| Start ~ Stop Frequency | 30MHz~1000MHz for QP detector |

### 4.2 TEST PROCEDURE

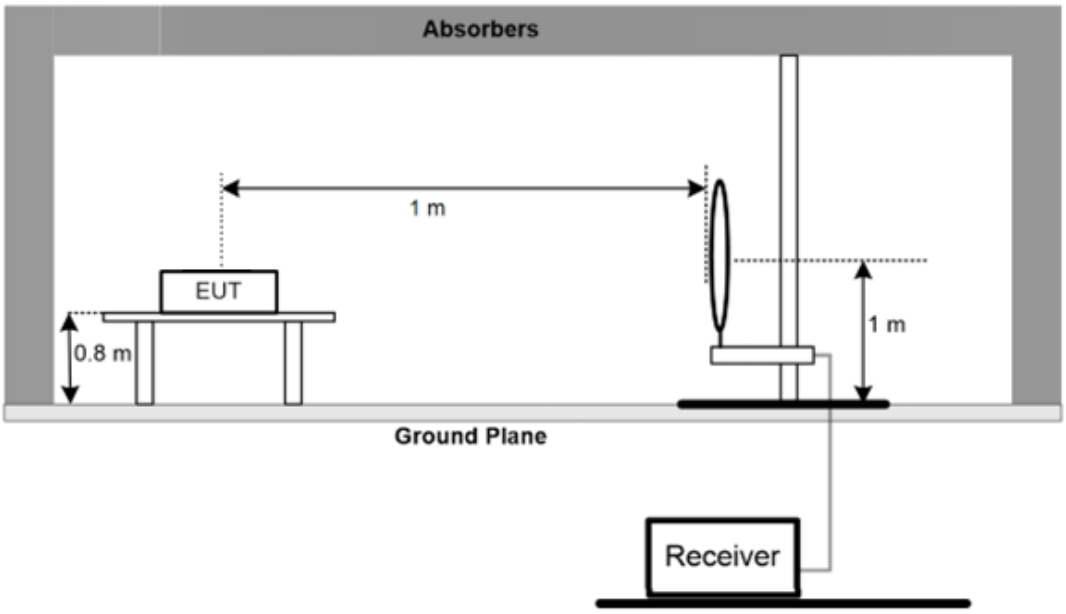
a. The measuring distance of 1 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 30MHz)
b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
c. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
d. The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
f. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
g. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
h. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform. (below 1GHz)
i. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn‘t perform. (above 1GHz)
j. For the actual test configuration, please refer to the related Item – EUT TEST PHOTO.

### 4.3 DEVIATION FROM TEST STANDARD

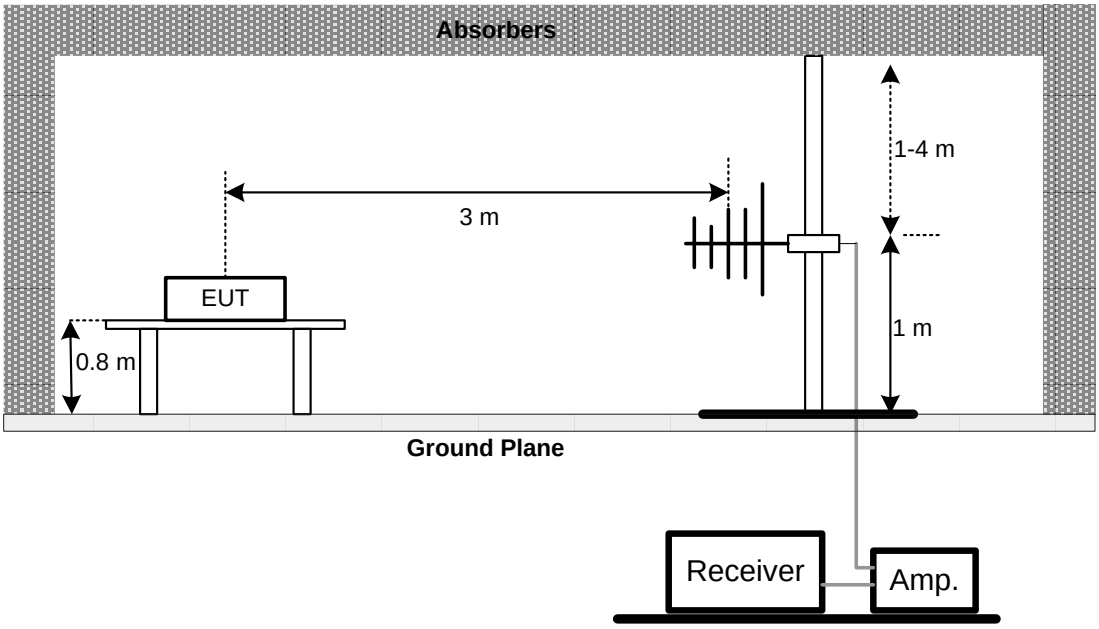
No deviation.

## 4.4 TEST SETUP

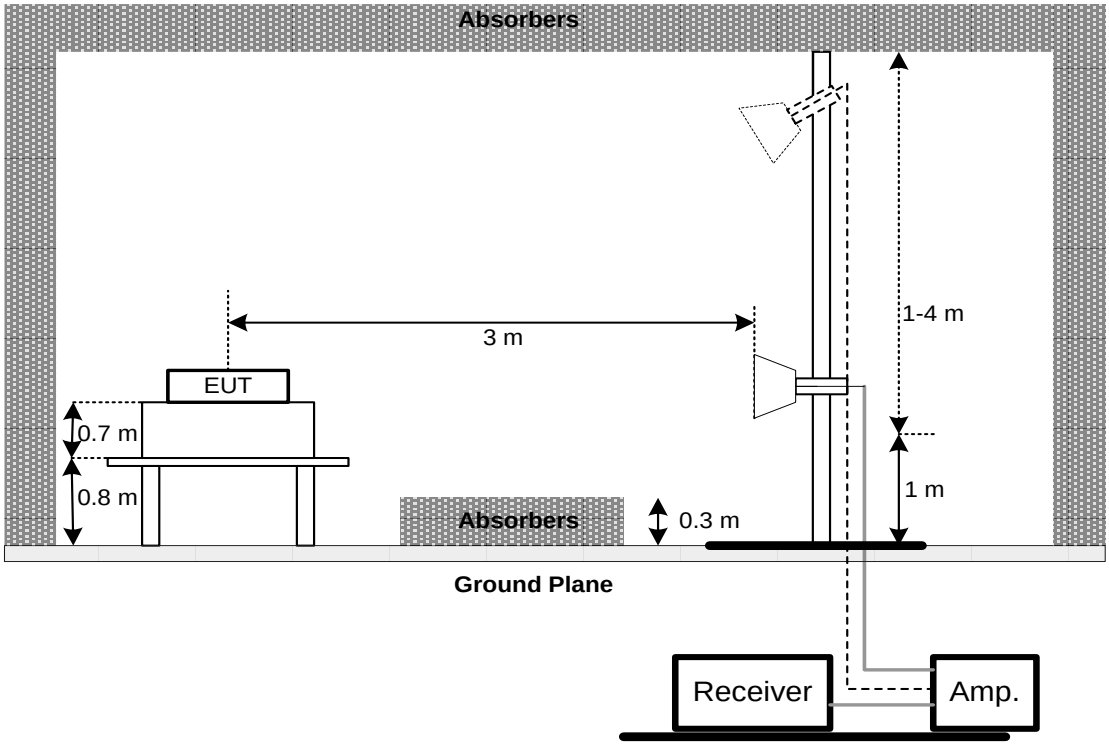
**9 kHz to 30 MHz**




**30 MHz to 1 GHz**



**Above 1 GHz**




### 4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 4.6 TEST RESULT – 9 KHZ TO 30 MHZ

Please refer to the APPENDIX B.

### 4.7 TEST RESULT – 30 MHZ TO 1 GHZ

Please refer to the APPENDIX C.

### 4.8 TEST RESULT – ABOVE 1 GHZ

Please refer to the APPENDIX D.

NOTE:

(1) No limit: This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

# 5 BANDWIDTH TEST

## 5.1 APPLIED PROCEDURES / LIMIT

| Section | Test Item | Limit | Frequency Range (MHz) | Result |
|---|---|---|---|---|
| 15.247(a)(2) | Bandwidth | >= 500KHz (6dB bandwidth) | 2400-2483.5 | PASS |

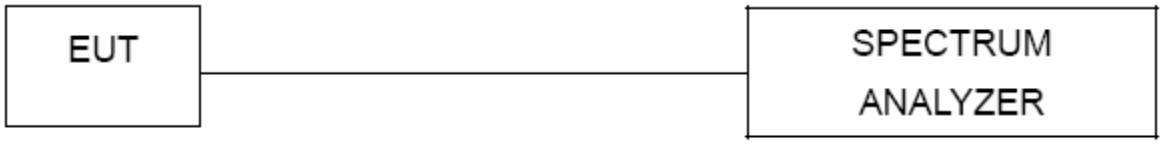
## 5.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW=300KHz, Sweep time = 2.5 ms.

## 5.3 DEVIATION FROM STANDARD

No deviation.

## 5.4 TEST SETUP




## 5.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 3.5 unless otherwise a special operating condition is specified in the follows during the testing.

## 5.6 TEST RESULTS

Please refer to the APPENDIX E.

# 6 OUTPUT POWER TEST

## 6.1 APPLIED PROCEDURES / LIMIT

| Section | Test Item | Limit | Frequency Range (MHz) | Result |
|---|---|---|---|---|
| 15.247(b)(3) | Maximum Output Power | 1 watt or 30dBm | 2400-2483.5 | PASS |

## 6.2 TEST PROCEDURE

a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,
b. The maximum peak conducted output power was performed in accordance with FCC KDB 558074 D01 15.247 Meas Guidance.

## 6.3 DEVIATION FROM STANDARD

No deviation.

## 6.4 TEST SETUP


## 6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 3.5 unless otherwise a special operating condition is specified in the follows during the testing.

## 6.6 TEST RESULTS

Please refer to the APPENDIX F.

# 7 POWER SPECTRAL DENSITY TEST

## 7.1 APPLIED PROCEDURES / LIMIT

| Section | Test Item | Limit | Frequency Range (MHz) | Result |
|---|---|---|---|---|
| 15.247(e) | Power Spectral Density | 8 dBm (in any 3KHz) | 2400-2483.5 | PASS |

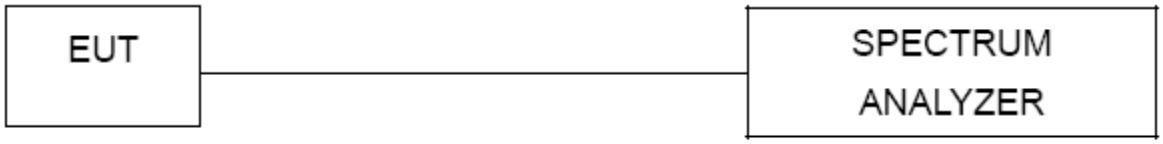
## 7.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting: RBW=3KHz, VBW=10 KHz, Sweep time = auto.

## 7.3 DEVIATION FROM STANDARD

No deviation.

## 7.4 TEST SETUP




## 7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 3.5 unless otherwise a special operating condition is specified in the follows during the testing.

## 7.6 TEST RESULTS

Please refer to the APPENDIX G.

# 8 ANTENNA CONDUCTED SPURIOUS EMISSION

## 8.1 APPLIED PROCEDURES / LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits.

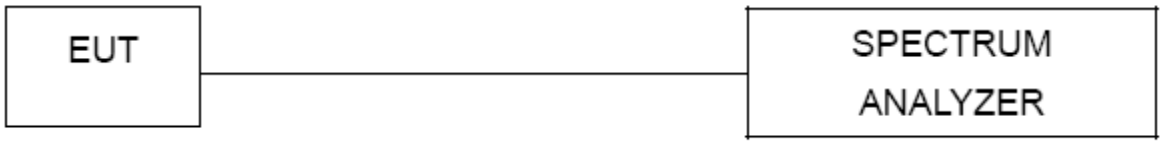
## 8.2 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW=300KHz, Sweep time = 10 ms.

## 8.3 DEVIATION FROM STANDARD

No deviation.

## 8.4 TEST SETUP




## 8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 3.5 unless otherwise a special operating condition is specified in the follows during the testing.

## 8.6 TEST RESULTS

Please refer to the APPENDIX H.

# 9 LIST OF MEASURING EQUIPMENTS

| AC Power Line Conducted Emissions | | | | | | |
|---|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated Date | Calibrated Until |
| 1 | TWO-LINE V-NETWORK | R&S | ENV216 | 101497 | 2024/5/20 | 2025/5/19 |
| 2 | Test Cable | EMCI | EMC400-BM-BM-5000 | 170501 | 2023/8/1 | 2024/7/31 |
| 3 | EMI Test Receiver | R&S | ESR3 | 102950 | 2024/4/12 | 2025/4/11 |
| 4 | Measurement Software | EZ | EZ_EMC (Version NB-03A1-01) | N/A | N/A | N/A |

| Radiated Emissions | | | | | | |
|---|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated Date | Calibrated Until |
| 1 | Preamplifier | EMCI | EMC330N | 980850 | 2023/9/6 | 2024/9/5 |
| 2 | Preamplifier | EMCI | EMC118A45SE | 980819 | 2024/3/6 | 2025/3/5 |
| 3 | Pre-Amplifier | EMCI | EMC184045SE | 980907 | 2023/9/21 | 2024/9/20 |
| 4 | Preamplifier | EMCI | EMC001340 | 980579 | 2023/9/6 | 2024/9/5 |
| 5 | Test Cable | EMCI | EMC104-SM-1000 | 180809 | 2024/3/8 | 2025/3/7 |
| 6 | Test Cable | EMCI | EMC104-SM-SM-3000 | 220322 | 2024/3/8 | 2025/3/7 |
| 7 | Test Cable | EMCI | EMC104-SM-SM-7000 | 220324 | 2024/3/8 | 2025/3/7 |
| 8 | EXA Signal Analyzer | keysight | N9020B | MY57120120 | 2024/2/23 | 2025/2/22 |
| 9 | Loop Ant | Electro-Metrics | EMCI-LPA600 | 291 | 2023/9/12 | 2024/9/11 |
| 10 | Horn Antenna | RFSPIN | DRH18-E | 211202A18EN | 2024/5/9 | 2025/5/8 |
| 11 | Horn Ant | Schwarzbeck | BBHA 9170D | 1136 | 2024/5/17 | 2025/5/16 |
| 12 | Log-bicon Antenna | Schwarzbeck | VULB9168 | 1369 | 2024/6/14 | 2025/6/13 |
| 13 | 6dB Attenuator | EMCI | EMCI-N-6-06 | AT-06001 | 2024/6/14 | 2025/6/13 |
| 14 | Test Cable | EMCI | EMC101G-KM-KM-3000 | 220329 | 2024/3/13 | 2025/3/12 |
| 15 | Test Cable | EMCI | EMC102-KM-KM-1000 | 220327 | 2024/3/13 | 2025/3/12 |
| 16 | Measurement Software | EZ | EZ_EMC (Version NB-03A1-01) | N/A | N/A | N/A |

| Bandwidth | | | | | | |
|---|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated Date | Calibrated Until |
| 1 | Spectrum Analyzer | R&S | FSP 40 | 101139 | 2024/3/8 | 2025/3/7 |

| Output Power | | | | | | |
|---|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated Date | Calibrated Until |
| 1 | Power Meter | Anritsu | ML2495A | 1128008 | 2024/5/11 | 2025/5/10 |
| 2 | Power Sensor | Anritsu | MA2411B | 1126001 | 2024/5/11 | 2025/5/10 |

| Power Spectral Density | | | | | | |
|---|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated Date | Calibrated Until |
| 1 | Spectrum Analyzer | R&S | FSP 40 | 101139 | 2024/3/8 | 2025/3/7 |

| Antenna conducted Spurious Emission | | | | | | |
|---|---|---|---|---|---|---|
| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated Date | Calibrated Until |
| 1 | Spectrum Analyzer | R&S | FSP 40 | 101139 | 2024/3/8 | 2025/3/7 |

Remark: “N/A” denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

## 10 EUT TEST PHOTO

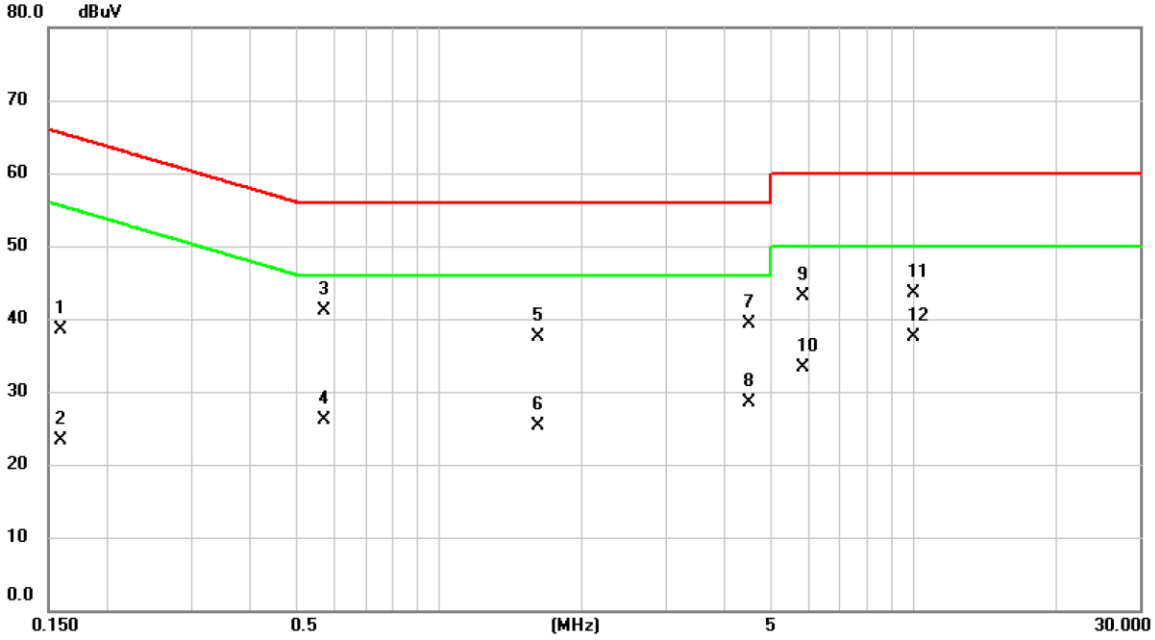
Please refer to document Appendix No.: TP-2104T005D-FCCP-1 (APPENDIX-TEST PHOTOS).

## 11 EUT PHOTOS

Please refer to document Appendix No.: EP-2104T005D-2 (APPENDIX-EUT PHOTOS).

# APPENDIX A AC POWER LINE CONDUCTED EMISSIONS

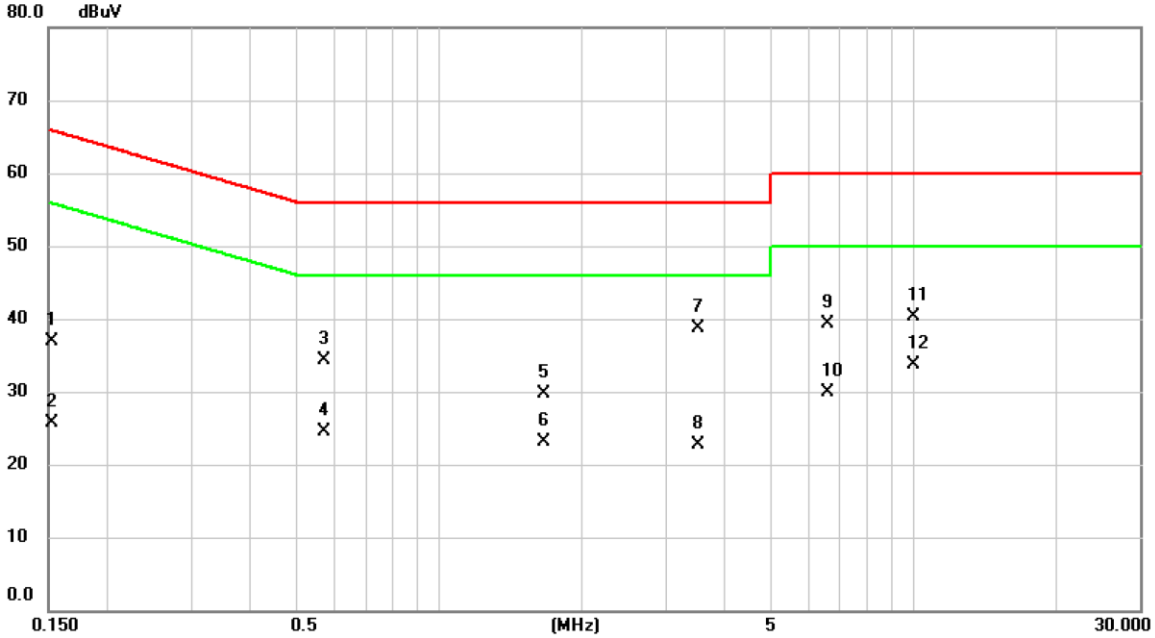
| Test Mode | Normal | Tested Date | 2024/6/25 |
|---|---|---|---|
| Test Frequency | - | Phase | Line |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1590 | 28.95 | 9.59 | 38.54 | 65.52 | -26.98 | QP | |
| 2 | | 0.1590 | 13.64 | 9.59 | 23.23 | 55.52 | -32.29 | AVG | |
| 3 | | 0.5707 | 31.42 | 9.59 | 41.01 | 56.00 | -14.99 | QP | |
| 4 | | 0.5707 | 16.45 | 9.59 | 26.04 | 46.00 | -19.96 | AVG | |
| 5 | | 1.6148 | 27.79 | 9.63 | 37.42 | 56.00 | -18.58 | QP | |
| 6 | | 1.6148 | 15.74 | 9.63 | 25.37 | 46.00 | -20.63 | AVG | |
| 7 | | 4.5060 | 29.57 | 9.72 | 39.29 | 56.00 | -16.71 | QP | |
| 8 | | 4.5060 | 18.84 | 9.72 | 28.56 | 46.00 | -17.44 | AVG | |
| 9 | | 5.8515 | 33.43 | 9.74 | 43.17 | 60.00 | -16.83 | QP | |
| 10 | | 5.8515 | 23.63 | 9.74 | 33.37 | 50.00 | -16.63 | AVG | |
| 11 | | 10.0163 | 33.79 | 9.79 | 43.58 | 60.00 | -16.42 | QP | |
| 12 | * | 10.0163 | 27.76 | 9.79 | 37.55 | 50.00 | -12.45 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

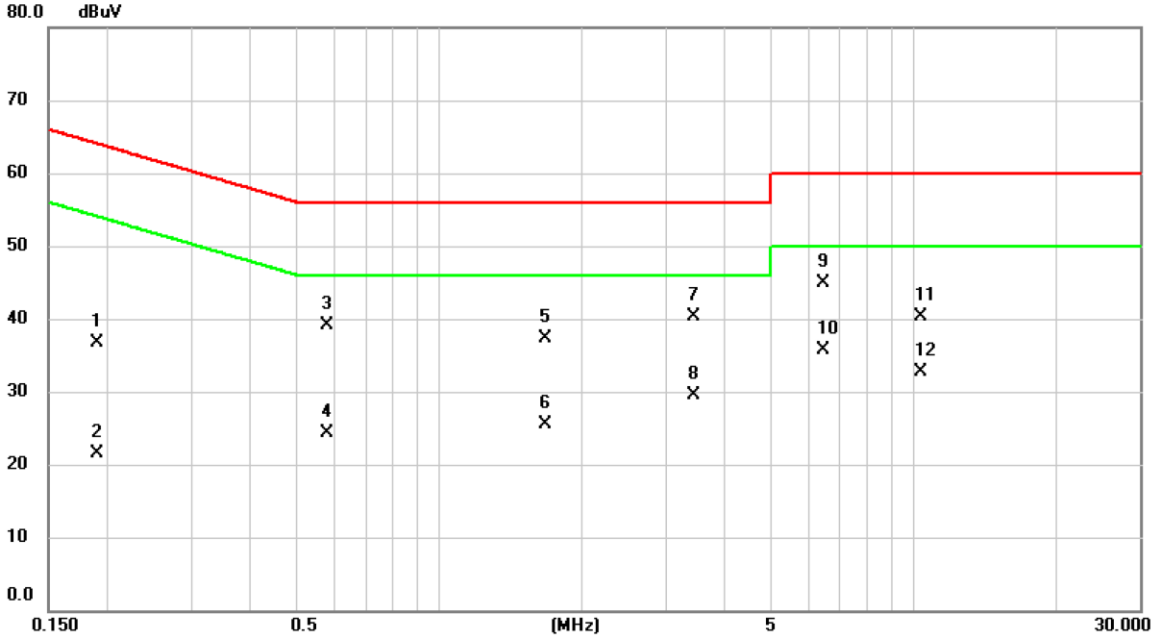
| Test Mode | Normal | Tested Date | 2024/6/25 |
|---|---|---|---|
| Test Frequency | - | Phase | Neutral |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1522 | 27.28 | 9.57 | 36.85 | 65.88 | -29.03 | QP | |
| 2 | | 0.1522 | 16.11 | 9.57 | 25.68 | 55.88 | -30.20 | AVG | |
| 3 | | 0.5730 | 24.71 | 9.60 | 34.31 | 56.00 | -21.69 | QP | |
| 4 | | 0.5730 | 14.91 | 9.60 | 24.51 | 46.00 | -21.49 | AVG | |
| 5 | | 1.6643 | 20.13 | 9.64 | 29.77 | 56.00 | -26.23 | QP | |
| 6 | | 1.6643 | 13.44 | 9.64 | 23.08 | 46.00 | -22.92 | AVG | |
| 7 | | 3.5048 | 28.90 | 9.71 | 38.61 | 56.00 | -17.39 | QP | |
| 8 | | 3.5048 | 13.06 | 9.71 | 22.77 | 46.00 | -23.23 | AVG | |
| 9 | | 6.5963 | 29.44 | 9.79 | 39.23 | 60.00 | -20.77 | QP | |
| 10 | | 6.5963 | 20.12 | 9.79 | 29.91 | 50.00 | -20.09 | AVG | |
| 11 | | 10.0163 | 30.39 | 9.83 | 40.22 | 60.00 | -19.78 | QP | |
| 12 | * | 10.0163 | 23.86 | 9.83 | 33.69 | 50.00 | -16.31 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

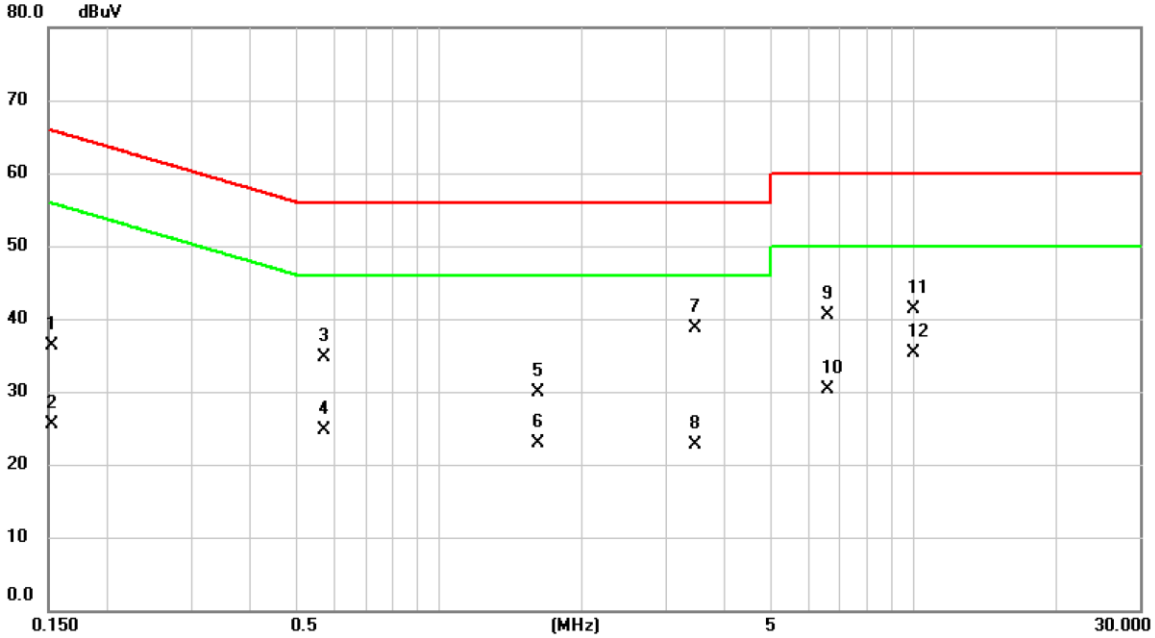
| Test Mode | Idle | Tested Date | 2024/6/25 |
|---|---|---|---|
| Test Frequency | - | Phase | Line |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1905 | 27.17 | 9.59 | 36.76 | 64.01 | -27.25 | QP | |
| 2 | | 0.1905 | 11.86 | 9.59 | 21.45 | 54.01 | -32.56 | AVG | |
| 3 | | 0.5820 | 29.57 | 9.59 | 39.16 | 56.00 | -16.84 | QP | |
| 4 | | 0.5820 | 14.79 | 9.59 | 24.38 | 46.00 | -21.62 | AVG | |
| 5 | | 1.6755 | 27.72 | 9.63 | 37.35 | 56.00 | -18.65 | QP | |
| 6 | | 1.6755 | 15.90 | 9.63 | 25.53 | 46.00 | -20.47 | AVG | |
| 7 | | 3.4395 | 30.53 | 9.68 | 40.21 | 56.00 | -15.79 | QP | |
| 8 | | 3.4395 | 19.91 | 9.68 | 29.59 | 46.00 | -16.41 | AVG | |
| 9 | | 6.4365 | 35.19 | 9.76 | 44.95 | 60.00 | -15.05 | QP | |
| 10 | * | 6.4365 | 25.93 | 9.76 | 35.69 | 50.00 | -14.31 | AVG | |
| 11 | | 10.3830 | 30.56 | 9.79 | 40.35 | 60.00 | -19.65 | QP | |
| 12 | | 10.3830 | 22.93 | 9.79 | 32.72 | 50.00 | -17.28 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

| Test Mode | Idle | Tested Date | 2024/6/25 |
|---|---|---|---|
| Test Frequency | - | Phase | Neutral |

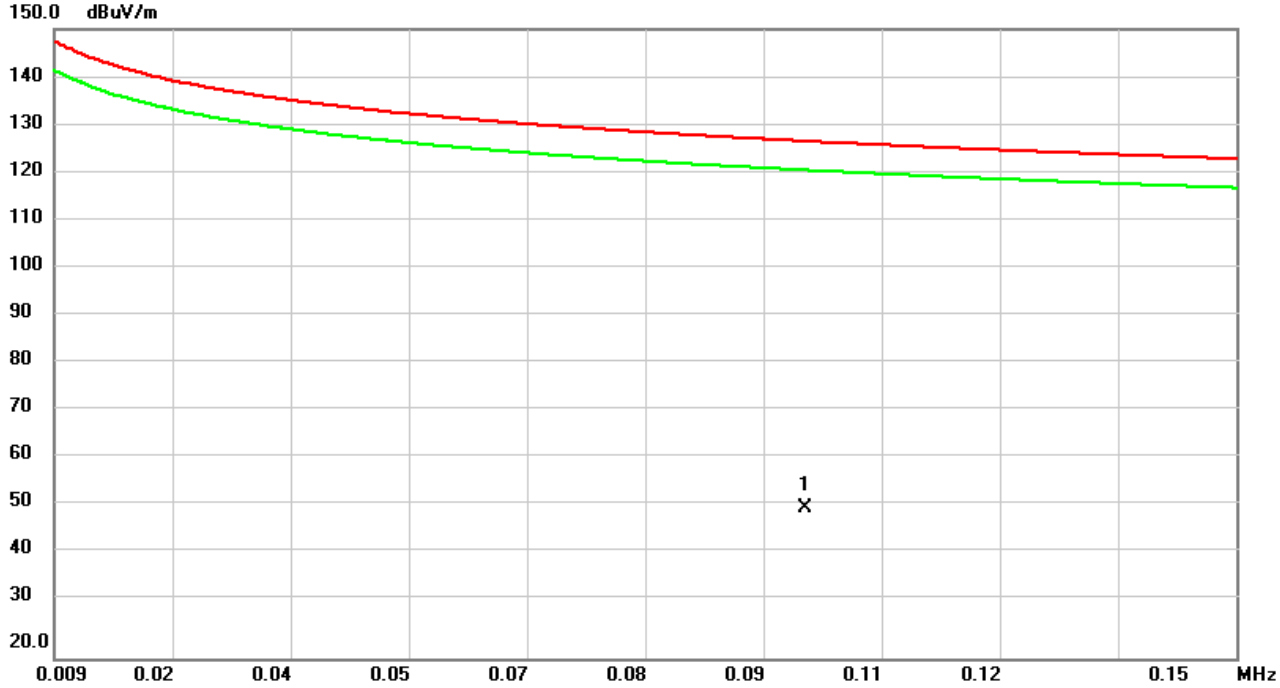



| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Margin | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.1522 | 26.68 | 9.57 | 36.25 | 65.88 | -29.63 | QP | |
| 2 | | 0.1522 | 16.03 | 9.57 | 25.60 | 55.88 | -30.28 | AVG | |
| 3 | | 0.5730 | 25.14 | 9.60 | 34.74 | 56.00 | -21.26 | QP | |
| 4 | | 0.5730 | 15.15 | 9.60 | 24.75 | 46.00 | -21.25 | AVG | |
| 5 | | 1.6170 | 20.23 | 9.64 | 29.87 | 56.00 | -26.13 | QP | |
| 6 | | 1.6170 | 13.18 | 9.64 | 22.82 | 46.00 | -23.18 | AVG | |
| 7 | | 3.4710 | 28.94 | 9.71 | 38.65 | 56.00 | -17.35 | QP | |
| 8 | | 3.4710 | 12.93 | 9.71 | 22.64 | 46.00 | -23.36 | AVG | |
| 9 | | 6.5963 | 30.77 | 9.79 | 40.56 | 60.00 | -19.44 | QP | |
| 10 | | 6.5963 | 20.42 | 9.79 | 30.21 | 50.00 | -19.79 | AVG | |
| 11 | | 10.0185 | 31.52 | 9.83 | 41.35 | 60.00 | -18.65 | QP | |
| 12 | * | 10.0185 | 25.44 | 9.83 | 35.27 | 50.00 | -14.73 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

# APPENDIX B RADIATED EMISSIONS - 9 KHZ TO 30 MHZ

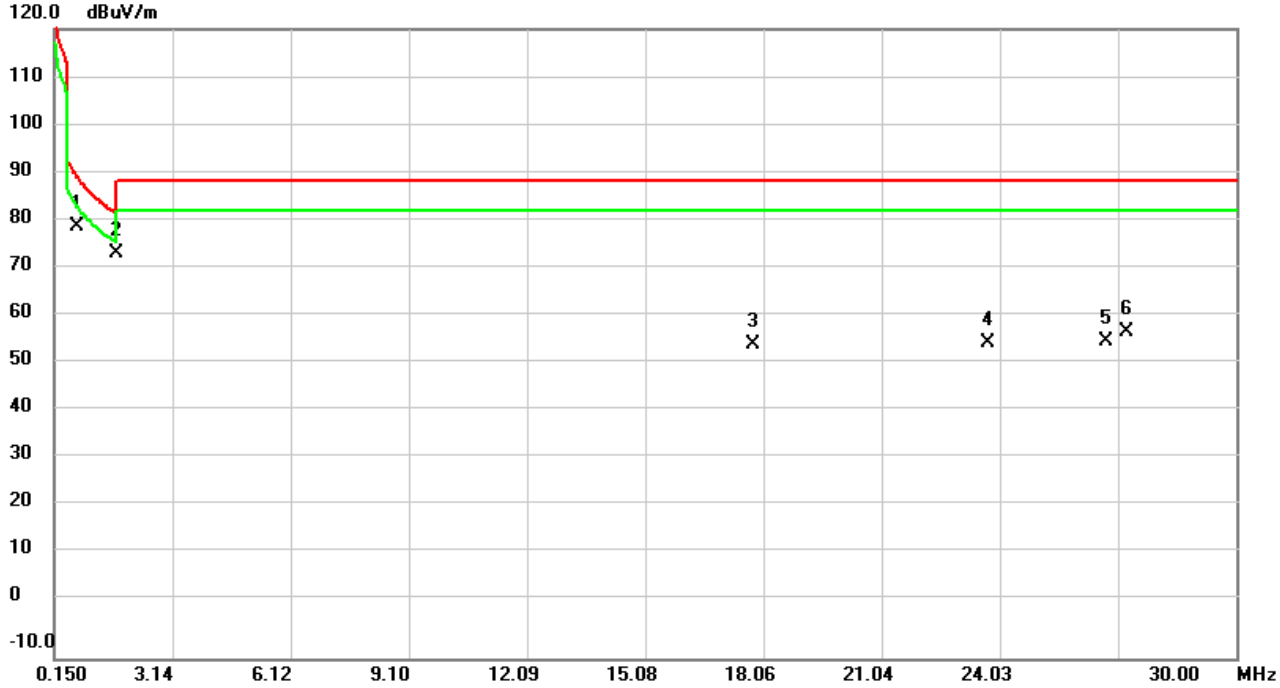
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/7/2 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Vertical |
| Temp | 27°C | Hum. | 53% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | * | 0.0986 | 34.14 | 16.84 | 50.98 | 126.81 | -75.83 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

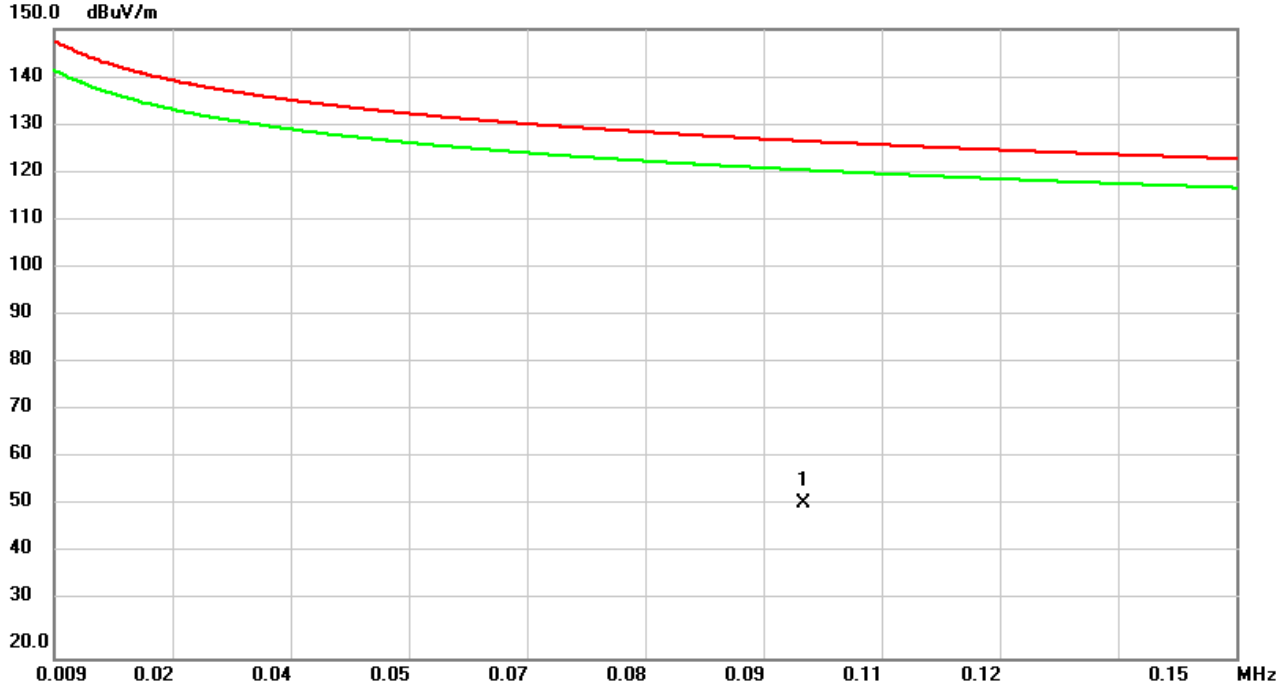
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/7/2 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Vertical |
| Temp | 27°C | Hum. | 53% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | * | 0.7460 | 76.16 | 3.11 | 79.27 | 89.23 | -9.96 | QP | |
| 2 | | 1.7370 | 74.64 | -1.06 | 73.58 | 88.62 | -15.04 | QP | |
| 3 | | 17.7982 | 58.85 | -3.89 | 54.96 | 88.62 | -33.66 | QP | |
| 4 | | 23.7294 | 57.45 | -2.32 | 55.13 | 88.62 | -33.49 | QP | |
| 5 | | 26.7005 | 56.51 | -0.91 | 55.60 | 88.62 | -33.02 | QP | |
| 6 | | 27.2448 | 57.95 | -0.65 | 57.30 | 88.62 | -31.32 | QP | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

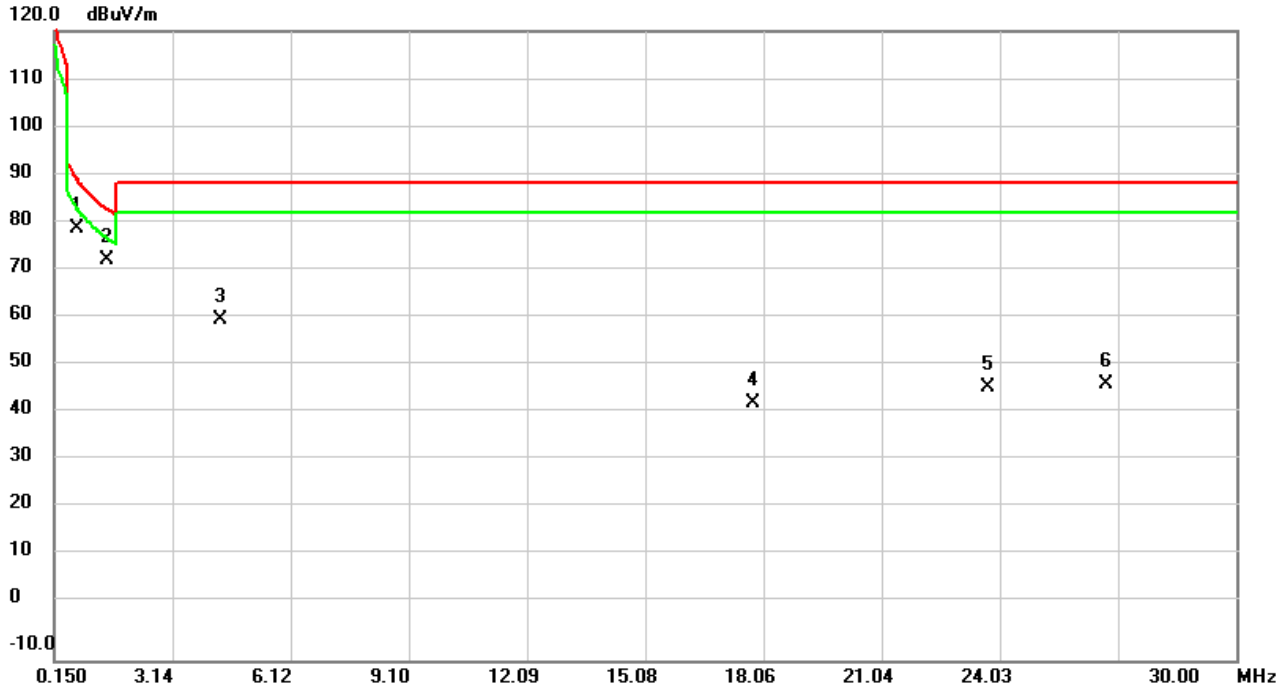
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/7/2 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Horizontal |
| Temp | 27°C | Hum. | 53% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | * | 0.0984 | 35.14 | 16.86 | 52.00 | 126.82 | -74.82 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/7/2 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Horizontal |
| Temp | 27°C | Hum. | 53% |

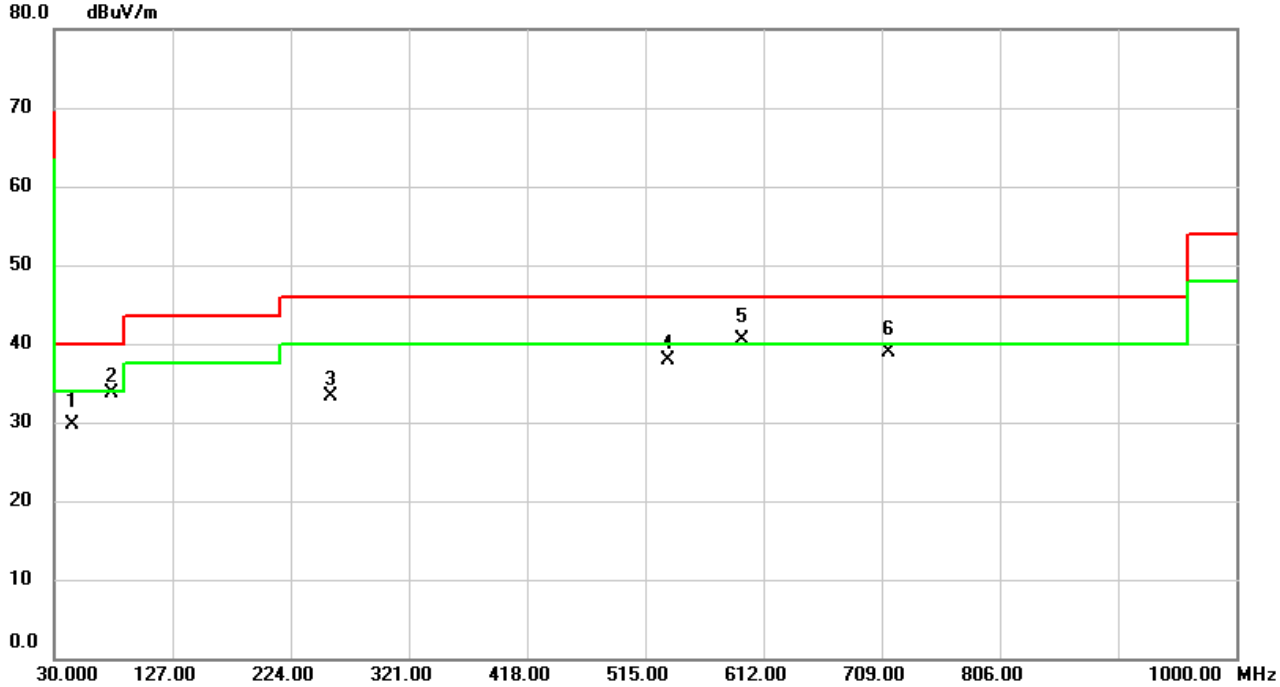



| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | * | 0.7460 | 76.07 | 3.11 | 79.18 | 89.23 | -10.05 | QP | |
| 2 | | 1.4972 | 72.99 | -0.43 | 72.56 | 83.17 | -10.61 | QP | |
| 3 | | 4.3420 | 64.67 | -4.20 | 60.47 | 88.62 | -28.15 | QP | |
| 4 | | 17.7904 | 47.13 | -3.89 | 43.24 | 88.62 | -45.38 | QP | |
| 5 | | 23.7275 | 48.86 | -2.32 | 46.54 | 88.62 | -42.08 | QP | |
| 6 | | 26.6986 | 47.89 | -0.91 | 46.98 | 88.62 | -41.64 | QP | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

# APPENDIX C RADIATED EMISSIONS - 30 MHZ TO 1 GHZ

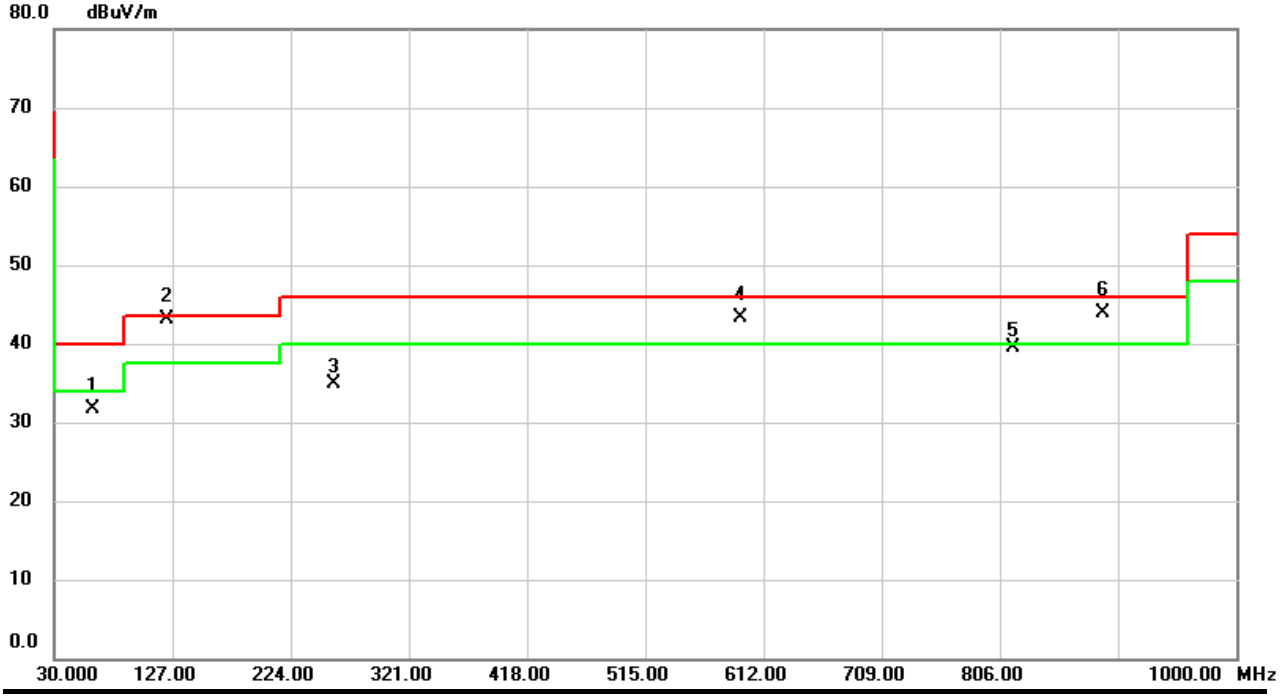
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/7/26 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Vertical |
| Temp | 21°C | Hum. | 56% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 45.4690 | 41.52 | -11.83 | 29.69 | 40.00 | -10.31 | QP | |
| 2 | | 77.2411 | 49.92 | -16.25 | 33.67 | 40.00 | -6.33 | peak | |
| 3 | | 257.0532 | 46.39 | -13.11 | 33.28 | 46.00 | -12.72 | peak | |
| 4 | | 533.1485 | 43.94 | -6.06 | 37.88 | 46.00 | -8.12 | peak | |
| 5 | * | 593.9827 | 45.17 | -4.60 | 40.57 | 46.00 | -5.43 | QP | |
| 6 | | 714.6385 | 41.38 | -2.54 | 38.84 | 46.00 | -7.16 | QP | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/7/26 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Horizontal |
| Temp | 21°C | Hum. | 56% |

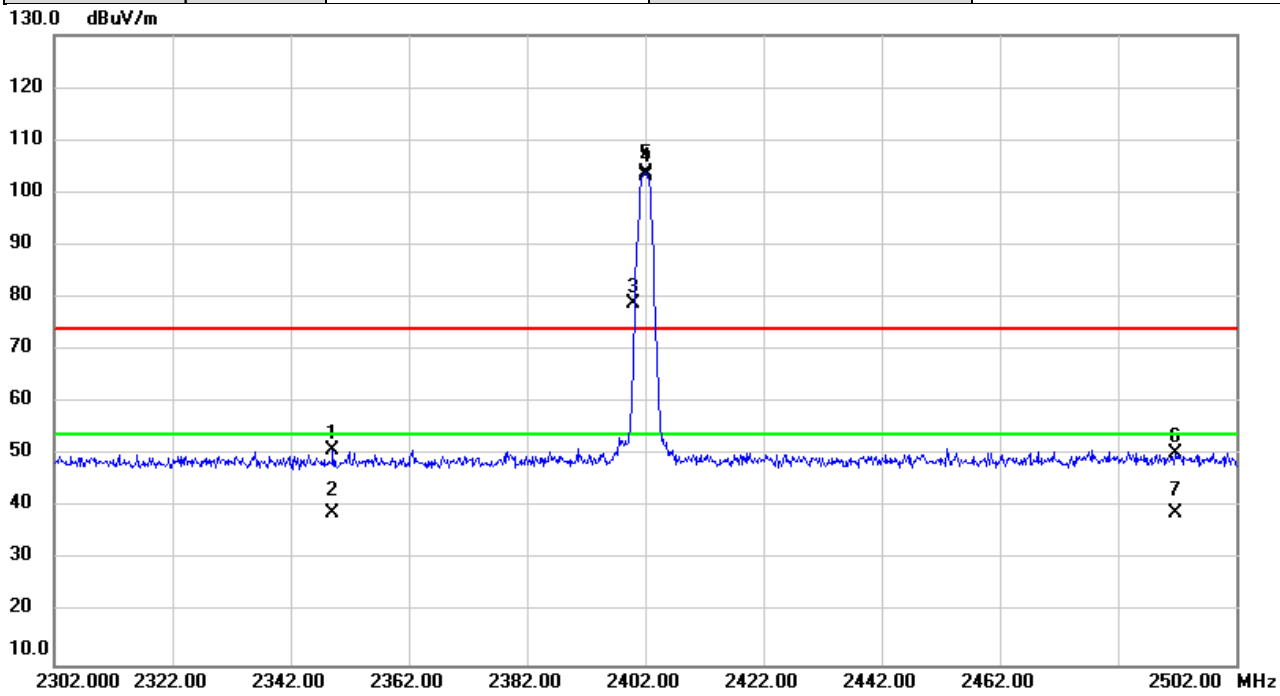



| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 62.2995 | 44.47 | -12.76 | 31.71 | 40.00 | -8.29 | QP | |
| 2 | * | 122.9011 | 57.27 | -14.22 | 43.05 | 43.50 | -0.45 | QP | |
| 3 | | 259.1145 | 48.00 | -13.06 | 34.94 | 46.00 | -11.06 | peak | |
| 4 | ! | 593.8897 | 47.95 | -4.61 | 43.34 | 46.00 | -2.66 | QP | |
| 5 | | 816.7120 | 40.69 | -1.10 | 39.59 | 46.00 | -6.41 | peak | |
| 6 | ! | 890.9724 | 44.18 | -0.24 | 43.94 | 46.00 | -2.06 | QP | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

# APPENDIX D RADIATED EMISSIONS - ABOVE 1 GHZ

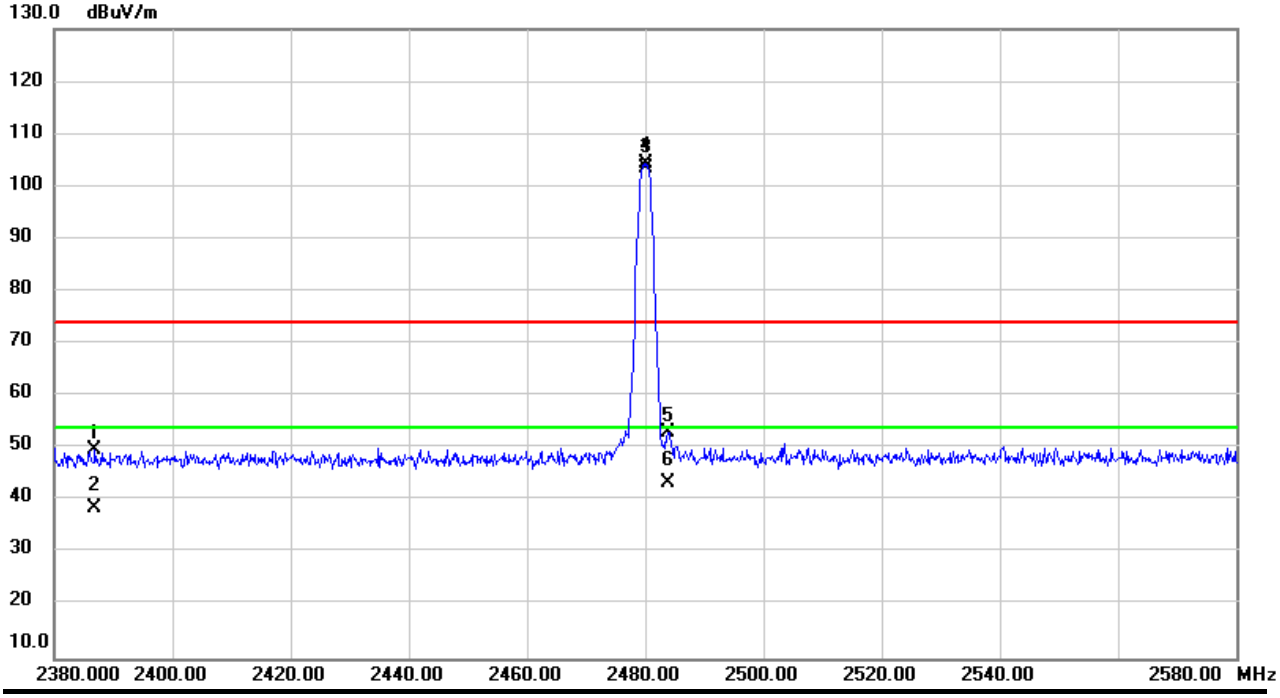
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/6/28 |
|---|---|---|---|
| Test Frequency | 2402MHz | Polarization | Horizontal |
| Temp | 27°C | Hum. | 66% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 2349.040 | 56.01 | -5.06 | 50.95 | 74.00 | -23.05 | peak | |
| 2 | | 2349.040 | 44.00 | -5.06 | 38.94 | 54.00 | -15.06 | AVG | |
| 3 | X | 2400.000 | 83.88 | -4.99 | 78.89 | 74.00 | 4.89 | peak | No Limit |
| 4 | X | 2402.000 | 108.76 | -5.00 | 103.76 | 74.00 | 29.76 | peak | No Limit |
| 5 | * | 2402.000 | 108.02 | -5.00 | 103.02 | 54.00 | 49.02 | AVG | No Limit |
| 6 | | 2491.713 | 55.25 | -4.87 | 50.38 | 74.00 | -23.62 | peak | |
| 7 | | 2491.713 | 43.69 | -4.87 | 38.82 | 54.00 | -15.18 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

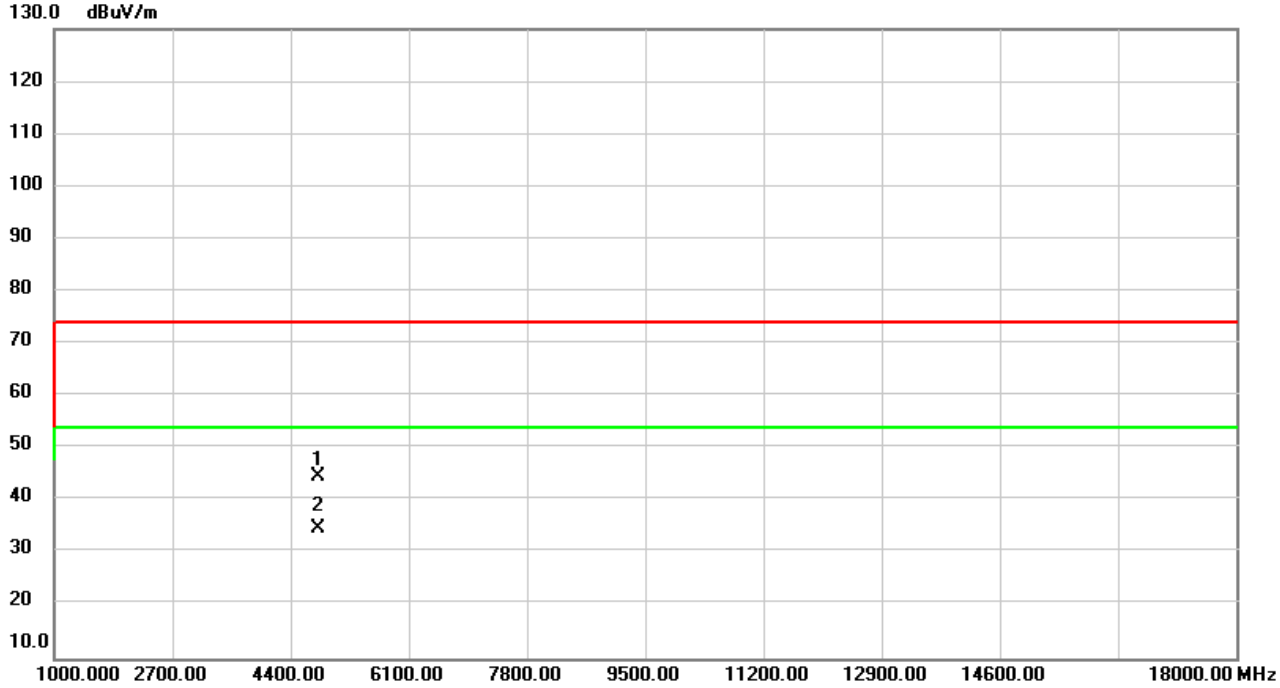
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/6/28 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Horizontal |
| Temp | 27°C | Hum. | 66% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 2386.827 | 54.71 | -5.01 | 49.70 | 74.00 | -24.30 | peak | |
| 2 | | 2386.827 | 43.61 | -5.01 | 38.60 | 54.00 | -15.40 | AVG | |
| 3 | X | 2480.000 | 109.10 | -4.89 | 104.21 | 74.00 | 30.21 | peak | No Limit |
| 4 | * | 2480.000 | 108.47 | -4.89 | 103.58 | 54.00 | 49.58 | AVG | No Limit |
| 5 | | 2483.993 | 57.93 | -4.87 | 53.06 | 74.00 | -20.94 | peak | |
| 6 | | 2483.993 | 48.24 | -4.87 | 43.37 | 54.00 | -10.63 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

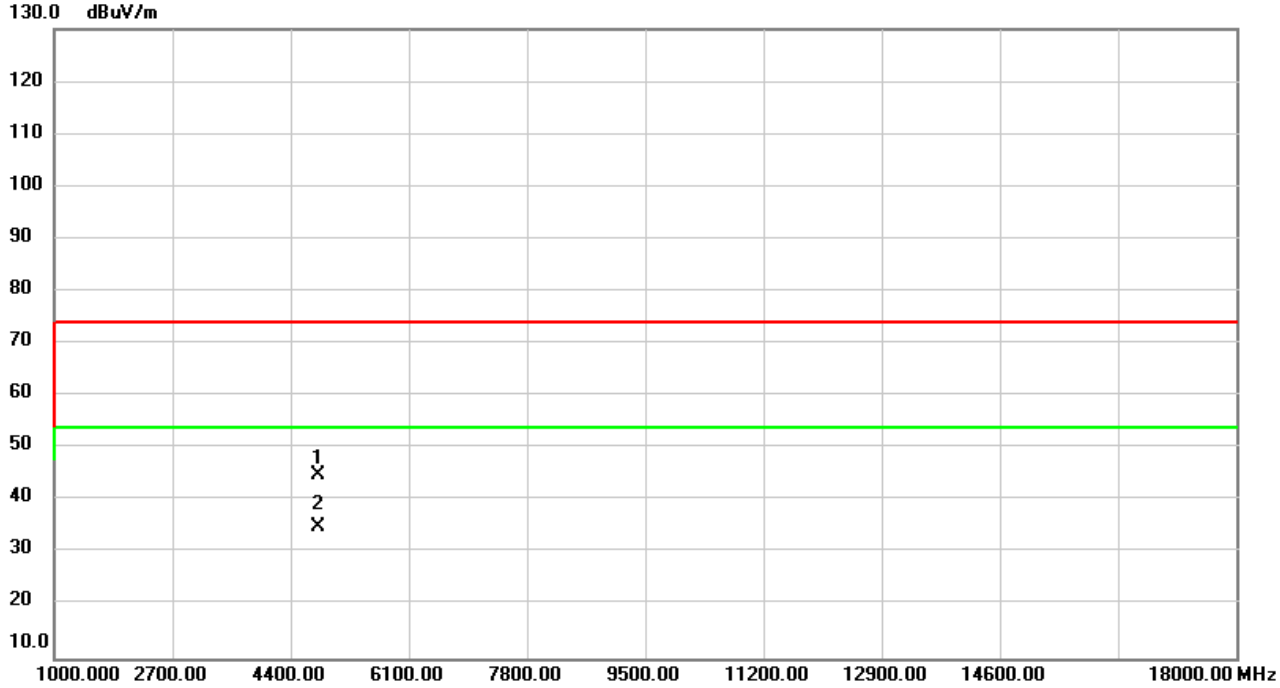
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/6/28 |
|---|---|---|---|
| Test Frequency | 2402MHz | Polarization | Vertical |
| Temp | 27°C | Hum. | 66% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 4804.000 | 43.86 | 0.88 | 44.74 | 74.00 | -29.26 | peak | |
| 2 | * | 4804.000 | 33.94 | 0.88 | 34.82 | 54.00 | -19.18 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

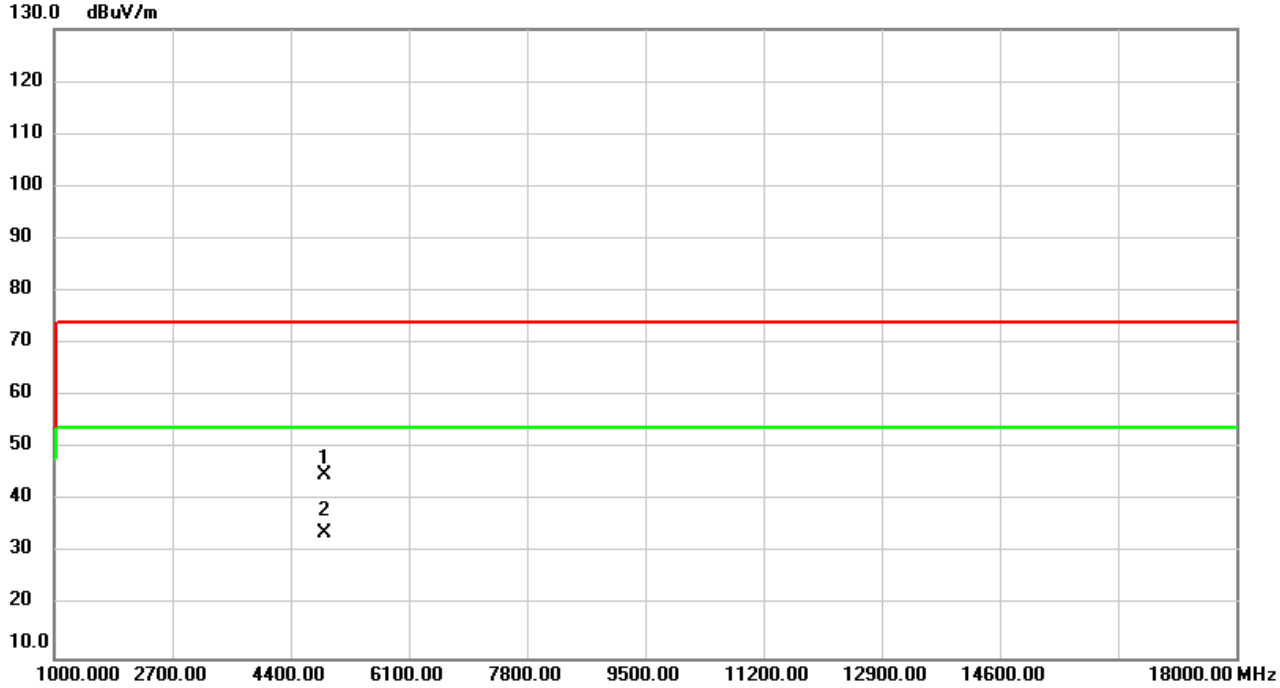
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/6/28 |
|---|---|---|---|
| Test Frequency | 2402MHz | Polarization | Horizontal |
| Temp | 27°C | Hum. | 66% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 4804.000 | 43.97 | 0.88 | 44.85 | 74.00 | -29.15 | peak | |
| 2 | * | 4804.000 | 34.18 | 0.88 | 35.06 | 54.00 | -18.94 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

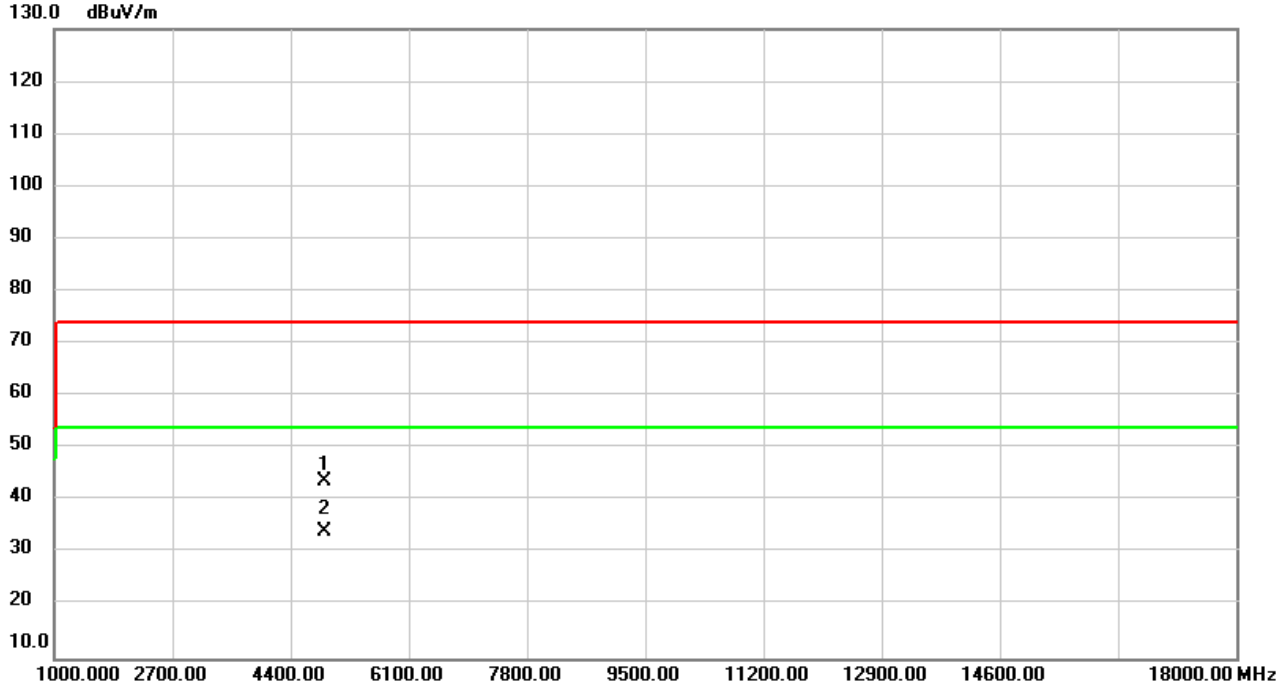
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/6/28 |
|---|---|---|---|
| Test Frequency | 2440MHz | Polarization | Vertical |
| Temp | 27°C | Hum. | 66% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 4880.000 | 43.88 | 1.03 | 44.91 | 74.00 | -29.09 | peak | |
| 2 | * | 4880.000 | 32.81 | 1.03 | 33.84 | 54.00 | -20.16 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

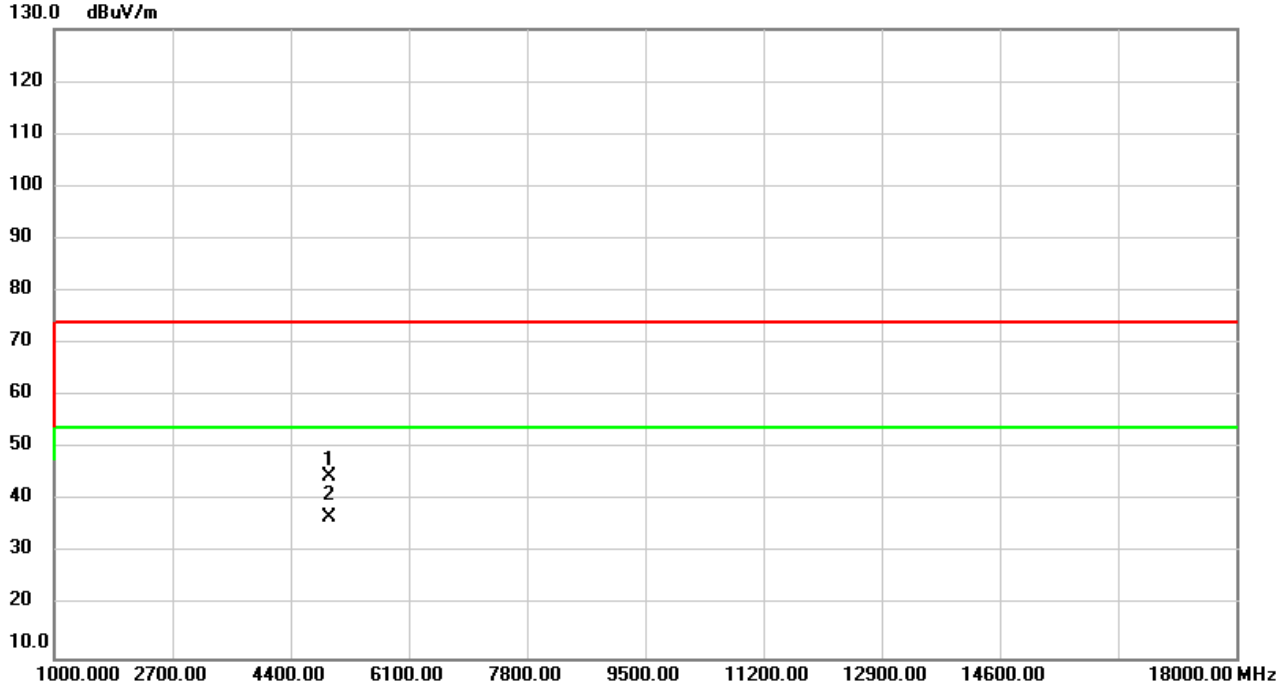
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/6/28 |
|---|---|---|---|
| Test Frequency | 2440MHz | Polarization | Horizontal |
| Temp | 27°C | Hum. | 66% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 4880.000 | 42.72 | 1.03 | 43.75 | 74.00 | -30.25 | peak | |
| 2 | * | 4880.000 | 33.18 | 1.03 | 34.21 | 54.00 | -19.79 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

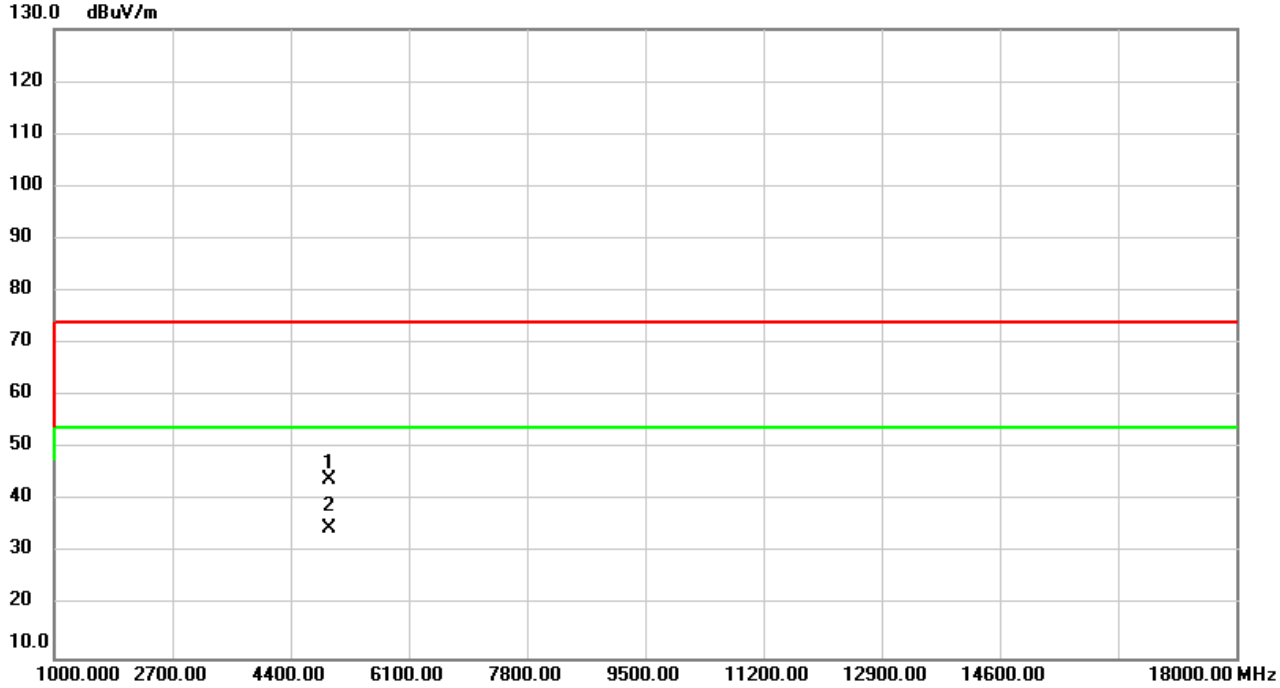
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/6/28 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Vertical |
| Temp | 27°C | Hum. | 66% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 4960.000 | 43.45 | 1.21 | 44.66 | 74.00 | -29.34 | peak | |
| 2 | * | 4960.000 | 35.60 | 1.21 | 36.81 | 54.00 | -17.19 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

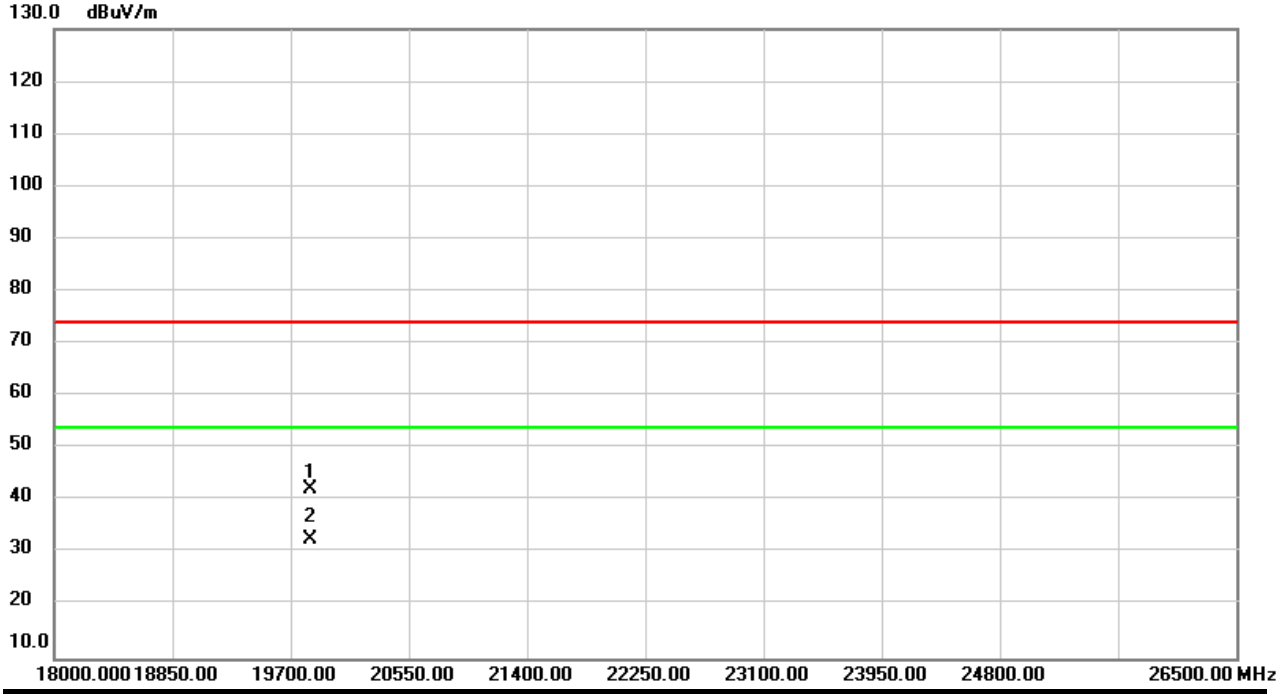
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/6/28 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Horizontal |
| Temp | 27°C | Hum. | 66% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 4960.000 | 42.97 | 1.21 | 44.18 | 74.00 | -29.82 | peak | |
| 2 | * | 4960.000 | 33.61 | 1.21 | 34.82 | 54.00 | -19.18 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

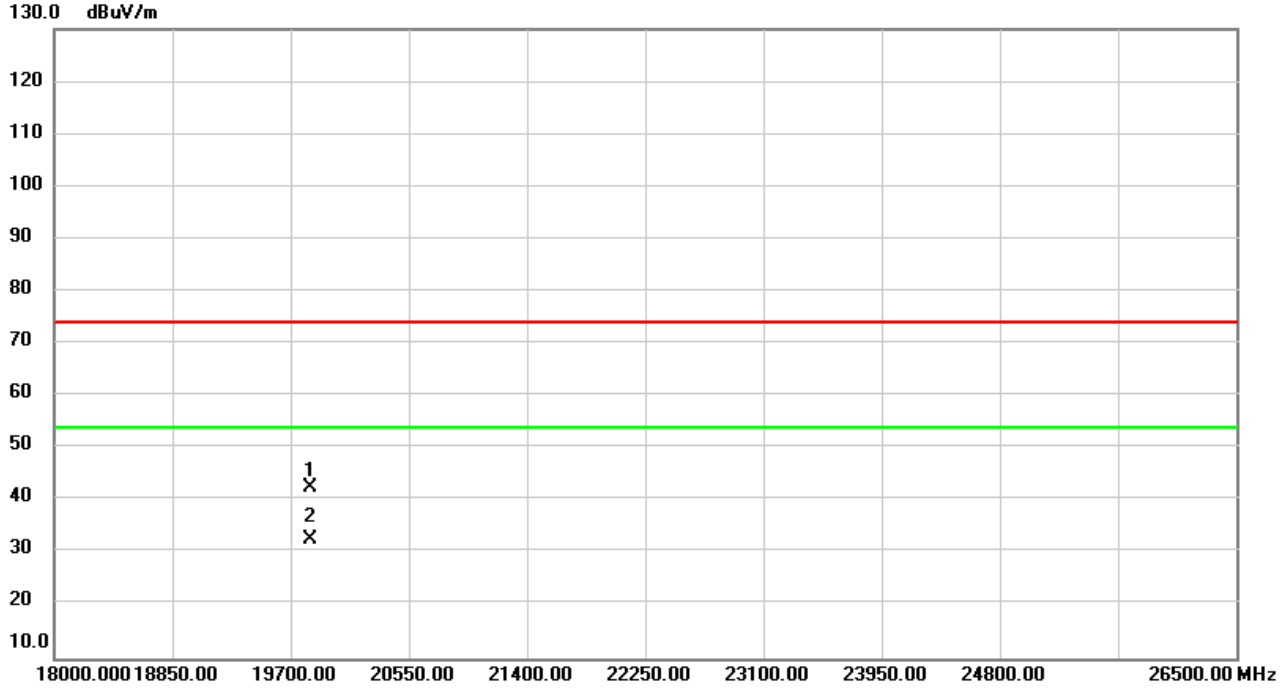
| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/7/1 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Vertical |
| Temp | 26°C | Hum. | 60% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 19840.00 | 48.53 | -6.26 | 42.27 | 74.00 | -31.73 | peak | |
| 2 | * | 19840.00 | 38.99 | -6.26 | 32.73 | 54.00 | -21.27 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

| Test Mode | BLE 5.0 (1 Mbps) | Test Date | 2024/7/1 |
|---|---|---|---|
| Test Frequency | 2480MHz | Polarization | Horizontal |
| Temp | 26°C | Hum. | 60% |




| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | Comment |
| 1 | | 19840.00 | 48.68 | -6.26 | 42.42 | 74.00 | -31.58 | peak | |
| 2 | * | 19840.00 | 38.79 | -6.26 | 32.53 | 54.00 | -21.47 | AVG | |

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

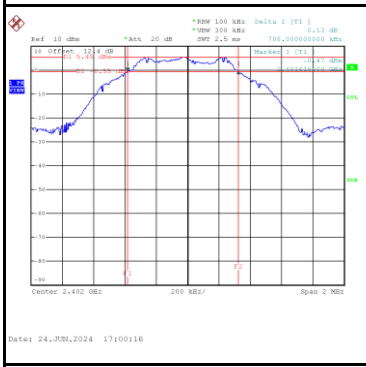
# APPENDIX E BANDWIDTH

| Test Mode: | 1Mbps |
|---|---|

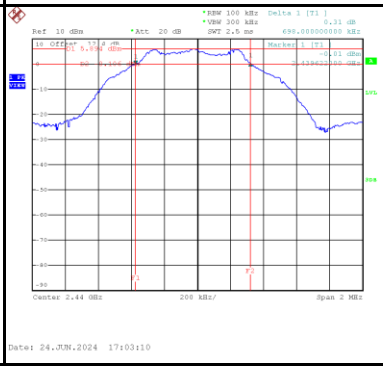
| Frequency (MHz) | 6dB Bandwidth (MHz) | 99% Occupied BW (MHz) | Min. Limit (kHz) | Test Result |
|---|---|---|---|---|
| 2402 | 0.71 | 1.06 | 500 | Pass |
| 2440 | 0.70 | 1.06 | 500 | Pass |
| 2480 | 0.69 | 1.06 | 500 | Pass |

**6dB Bandwidth**

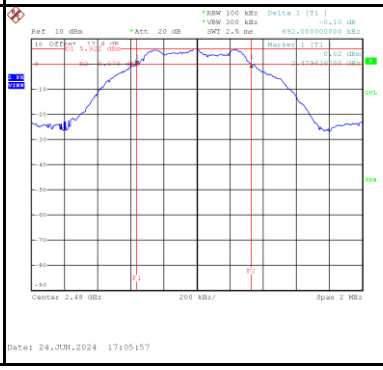
**2402 MHz**



**2440 MHz**

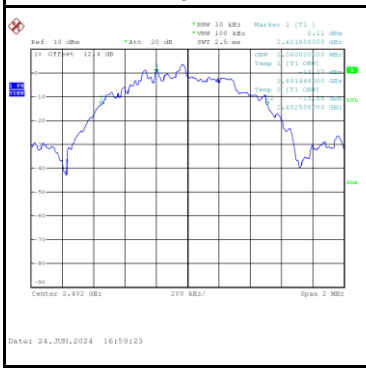


**2480 MHz**

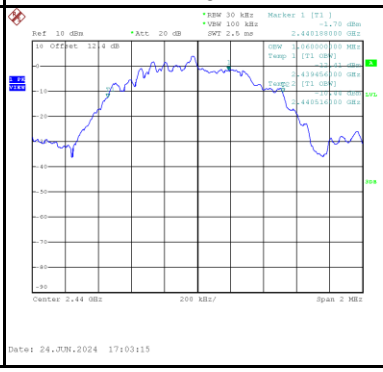


**99% Occupied BW**

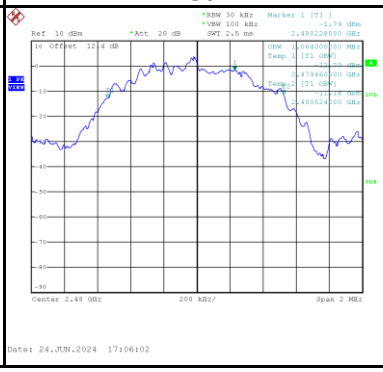
**2402 MHz**



**2440 MHz**



**2480 MHz**



# APPENDIX F OUTPUT POWER

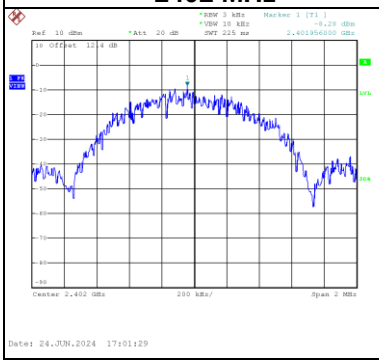
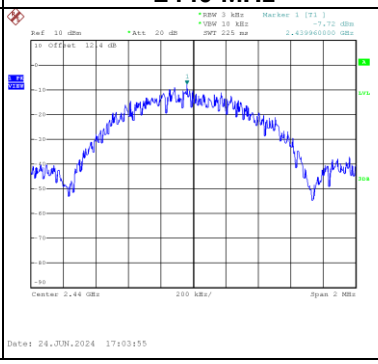
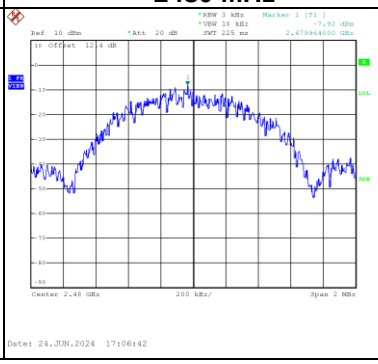
| Test Mode : | 1Mbps | Tested Date | 2024/6/21 |
|---|---|---|---|

| Frequency (MHz) | Conducted Power (dBm) | Conducted Power (W) | Max. Limit (dBm) | Max. Limit (W) | Test Result |
|---|---|---|---|---|---|
| 2402 | 6.51 | 0.0045 | 30.00 | 1.0000 | Pass |
| 2440 | 6.65 | 0.0046 | 30.00 | 1.0000 | Pass |
| 2480 | 6.49 | 0.0045 | 30.00 | 1.0000 | Pass |

# APPENDIX G POWER SPECTRAL DENSITY TEST

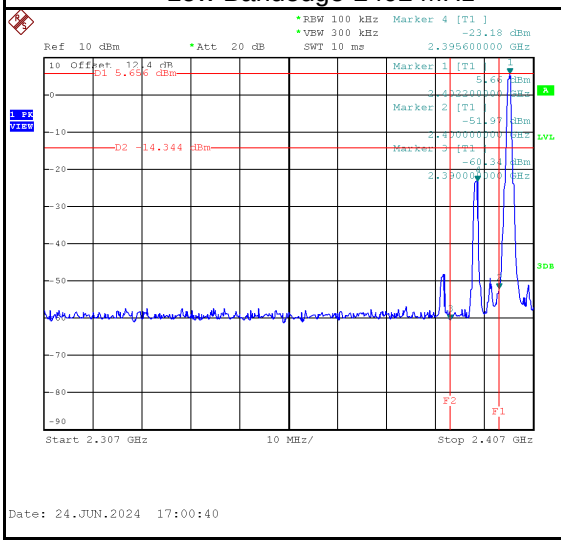
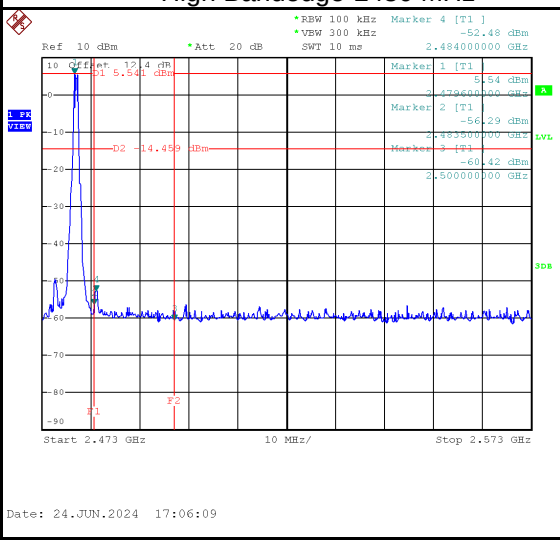
| Test Mode : | 1Mbps |
|---|---|

| Frequency (MHz) | Power Density (dBm/3kHz) | Max. Limit (dBm/3kHz) | Test Result |
|---|---|---|---|
| 2402 | -8.28 | 8 | Pass |
| 2440 | -7.72 | 8 | Pass |
| 2480 | -7.92 | 8 | Pass |

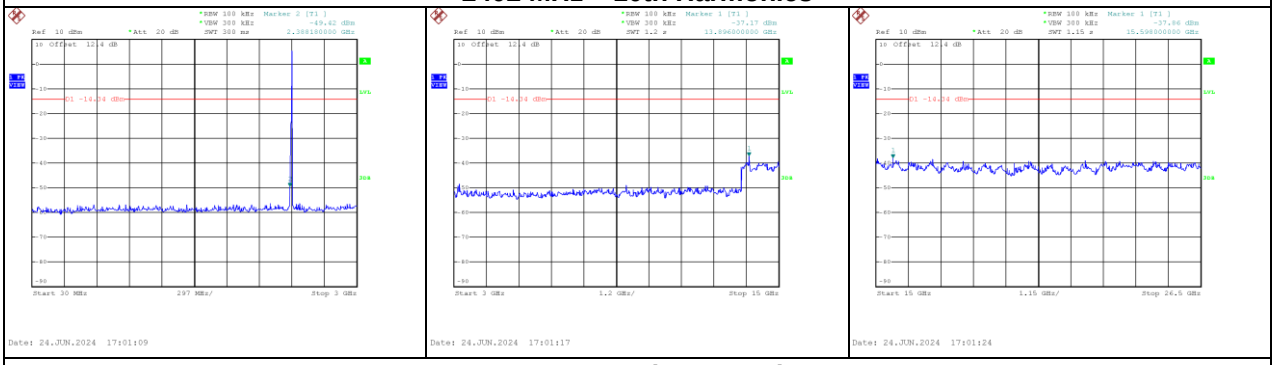
| 2402 MHz | 2440 MHz | 2480 MHz |
|---|---|---|
|  |  |  |

# APPENDIX H ANTENNA CONDUCTED SPURIOUS EMISSION

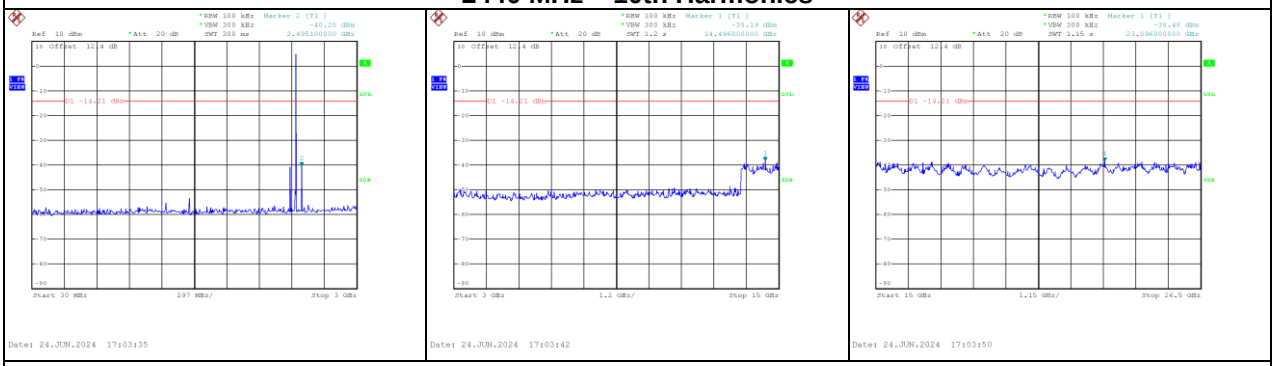
| Test Mode : | 1Mbps |
|---|---|

| Low Bandedge-2402 MHz | High Bandedge-2480 MHz |
|---|---|
|  |  |

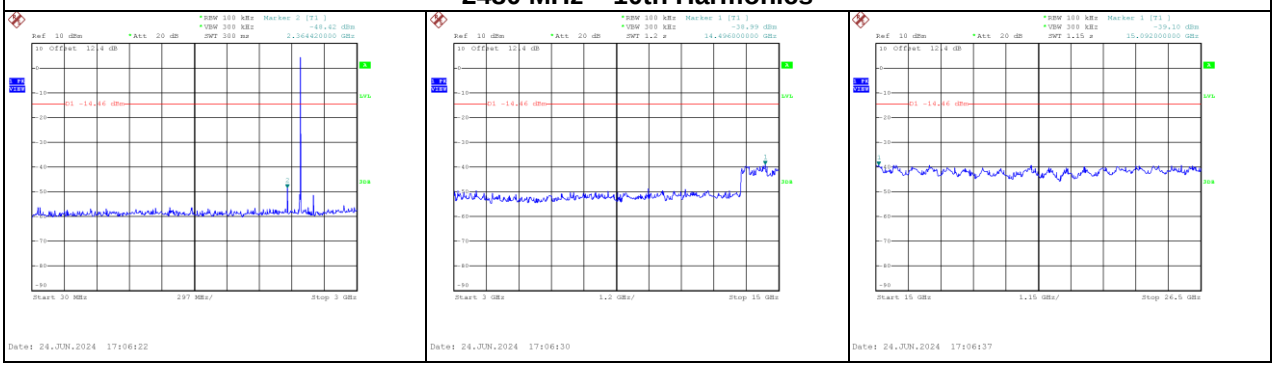
**2402 MHz – 10th Harmonics**



**2440 MHz – 10th Harmonics**



**2480 MHz – 10th Harmonics**



**End of Test Report**