# TEST REPORT

| | | |
|---|---|---|
| **Reference No.** | : | WTD22D05089750W001 V2 |
| **FCC ID** | : | 2A6YT-EB150P |
| **Applicant** | : | ProVista Technology International Ltd. |
| **Address** | : | Unit J, 33/F, COS Centre, 56 Tsun Yip Street, Kwun Tong, Kowloon, Hong Kong |
| **Manufacturer** | : | DONGGUAN PROTRONIC ELECTRONICS LTD. |
| **Address** | : | Protronic Building, Xiangxi Village, Shipai Town, Dongguan City, Guangdong Province, P.R. China |
| **Product** | : | Solar Power Generator |
| **Model(s)** | : | EB150P, SGI505 |
| **Standards** | : | FCC 47CFR Part 15 Subpart C |
| **Date of Receipt sample** | : | 2022-05-10 |
| **Date of Test** | : | 2022-05-11 to 2022-05-23 |
| **Date of Issue** | : | 2022-07-11 |
| **Test Result** | : | **Pass** |

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.


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Approved by:

Daniel Liu / Designated Reviewer

# 2 Contents

# 3 Revision History

| Test report No. | Date of Receipt sample | Date of Test | Date of Issue | Purpose | Comment | Approved |
|---|---|---|---|---|---|---|
| WTD22D05089 750W001 | 2022-05-10 | 2022-05-11 to 2022-05-23 | 2022-06-21 | original | - | Replaced |
| WTD22D05089 750W001 V1 | 2022-05-10 | 2022-05-11 to 2022-05-23 | 2022-06-28 | Version 1 | Updated | Valid |
| WTD22D05089 750W001 V2 | 2022-05-10 | 2022-05-11 to 2022-05-23 | 2022-07-11 | Version 2 | Updated | Valid |

# 4 General Information

## 4.1 General Description of E.U.T

| | | |
|---|---|---|
| Product..... | : | Solar Power Generator |
| Model(s)..... | : | EB150P, SGI505 |
| Model Difference..... | : | Only the model name is different. |
| Hardware Version..... | : | 1.SGI505-CNTRL-V1.3 |
| Software Version..... | : | eb150x-advance-V1.2 |

## 4.2 Details of E.U.T.

| | | |
|---|---|---|
| Frequency Range..... | : | WPT 110-205kHz |
| Max. RF output power... | : | WPT 62.62dBμV/m@3m distance |
| Type of Modulation..... | : | Load Modulation |
| Antenna installation..... | : | Inductive loop coil Antenna |
| Wireless output..... | : | 10W Max. |
| Ratings..... | : | DC 12V from adapter<br>(Adapter Input: 100-240V~50-60Hz 1.0A)<br>DC 12V/24V |
| Adapter: | | Model No.: AK36WG-1200300U |

**Note:** please refer to user manual and EUT photos for more details.

## 4.3 Test Facility

The test facility has a test site registered with the following organizations:

**ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.**

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A, October 15, 2016.

**FCC Designation No.: CN1201. Test Firm Registration No.: 523476.**

Waltek Testing Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration number 523476, September 10, 2019.

## 4.4 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

## 4.5 Abnormalities from Standard Conditions

None.

## 4.6 Test Mode

| Test Mode | Descriptions |
|---|---|
| Idle mode (standby) | EUT alone powered by AC/DC adapter |
| Charging mode | Full-load |

**Note**:
All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst-data were recorded and reported.

# 5 Test Summary

| Test Items | Test Requirement | Result |
|---|---|---|
| Conducted Emission | FCC 47CFR part 15§15.207 | PASS |
| Radiated Emission | FCC 47CFR part 15§15.209 | PASS |
| 20dB Bandwidth | FCC 47CFR part 15§15.215 | PASS |
| Antenna Requirement | FCC 47CFR part 15§15.203 | PASS |
| RF Exposure | FCC 47CFR part2 §2.1901<br>KDB 680106 D01 v03 | PASS |
| Note: Pass=Compliance; NC=Not Compliance; NT=Not Tested; N/A=Not Applicable | | |

Note: -

# 6 Equipment Used during Test

## 6.1 Equipments List

| Conducted Emissions (Test software: EZ-EMC Model No.: RA-03A1-1) | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Cal. Date** | **Valid** |
| 1 | EMI Test Receiver | R&S | ESCI | 100947 | 2021-07-26 | 1Year |
| 2 | LISN | R&S | ENV216 | 100115 | 2021-07-26 | 1Year |
| 3 | Cable | Top | TYPE16(3.5M) | - | 2021-07-26 | 1Year |
| **3m Semi-anechoic Chamber for Radiation Emissions (TDK) (Test software: EZ-EMC Model No.: RA-03A1-1)** | | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No** | **Last Cal. Date** | **Valid** |
| 1 | Test Receiver | R&S | ESCI | 101296 | 2022-04-28 | 1Year |
| 2 | Trilog Broadband Antenna | SCHWARZBECK | VULB9160 | 9160-3325 | 2021-10-31 | 1Year |
| 3 | Active Loop Antenna | Com-Power Corp. | AL-130R | 10160007 | 2022-05-02 | 1Year |
| 4 | Amplifier | ANRITSU | MH648A | M43381 | 2022-04-28 | 1Year |
| 5 | Cable | HUBER+SUHNER | CBL2 | 525178 | 2022-04-28 | 1Year |
| **RF Conducting** | | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No** | **Last Cal. Date** | **Valid** |
| 1 | Spectrum Analyzer | R&S | FSP40 | 100501 | 2021-08-13 | 1Year |

## 6.2 Description of Support Units

| Equipment | Manufacturer | Model No. | Series No. |
|---|---|---|---|
| Wireless charging dummy load (10W) | Waltek | / | / |

## 6.3 Measurement Uncertainty

| Parameter | Uncertainty |
|---|---|
| Conducted Emission | ± 3.64 dB (AC mains 150KHz~30MHz) |
| Radiated Spurious Emissions | ± 5.08 dB (Bilog antenna 30M~1000MHz) |
| | ± 5.47 dB (Horn antenna 1000M~25000MHz) |
| Radio Frequency | ± 1 x $10^{-7}$Hz |
| RF Power | ± 0.42 dB |
| RF Power Density | ± 0.7dB |
| Conducted Spurious Emissions | ± 2.76 dB (9kHz~26500MHz) |
| Confidence interval：95%. Confidence factor: k=2 | |

# 7 Conducted Emission

Test Requirement: FCC 47CFR part 15§15.207

Test Method: ANSI C63.10:2013

Test Result: PASS

Frequency Range: 150kHz to 30MHz

Limit:

| Frequency (MHz) | Limit (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 to 0.5 | 66 to 56* | 56 to 46* |
| 0.5 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |
| * Decreases with the logarithm of the frequency. | | |

## 7.1 EUT Operation

Operating Environment:

Temperature: 23.5 °C

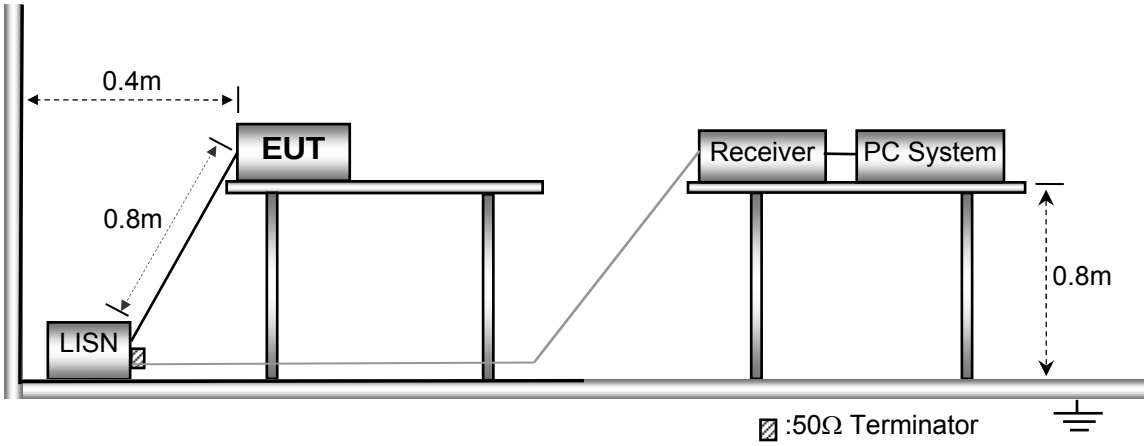
Humidity: 46.8 % RH

Atmospheric Pressure: 101.6kPa

EUT Operation: Refer to section 4.6.

## 7.2 EUT Setup

The EUT was placed on the test table in shielding room.

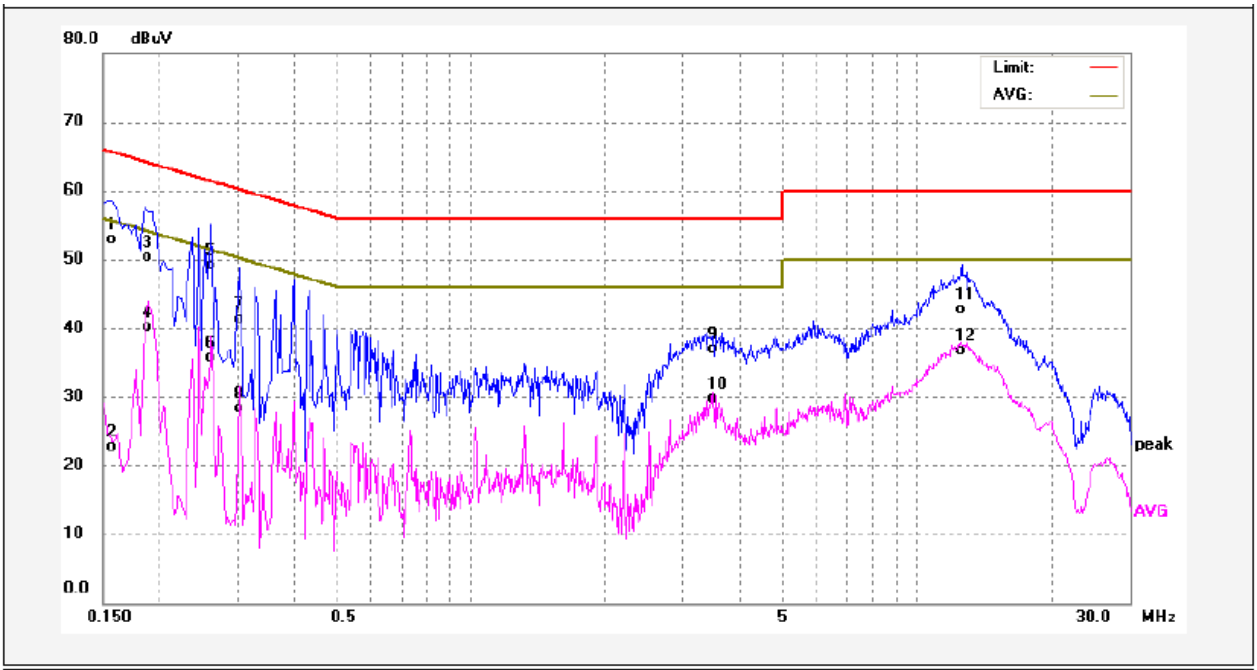



## 7.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

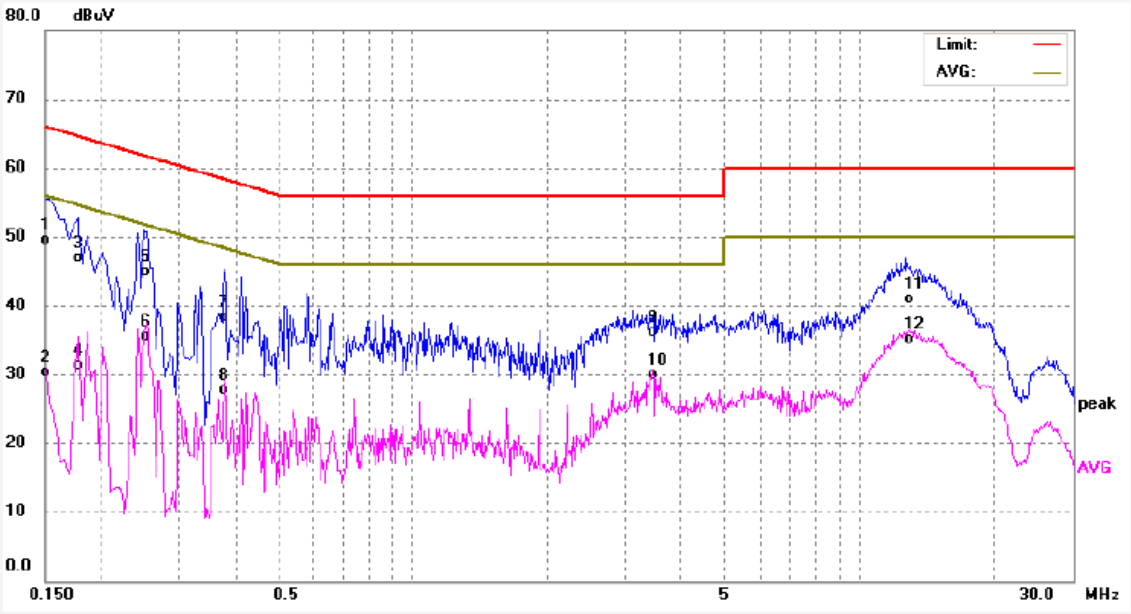
## 7.4 Conducted Emission Test Result

Live line:




| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB) | Result (dBuV) | Limit dBuV | Margin (dB) | Detector | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.1580 | 42.77 | 10.23 | 53.00 | 65.56 | -12.56 | QP | |
| 2 | 0.1580 | 12.55 | 10.23 | 22.78 | 55.56 | -32.78 | AVG | |
| 3 | 0.1900 | 40.18 | 10.22 | 50.40 | 64.03 | -13.63 | QP | |
| 4 | 0.1900 | 29.79 | 10.22 | 40.01 | 54.03 | -14.02 | AVG | |
| 5 | 0.2620 | 38.83 | 10.19 | 49.02 | 61.36 | -12.34 | QP | |
| 6 | 0.2620 | 25.51 | 10.19 | 35.70 | 51.36 | -15.66 | AVG | |
| 7 | 0.3020 | 31.12 | 10.18 | 41.30 | 60.19 | -18.89 | QP | |
| 8 | 0.3020 | 18.17 | 10.18 | 28.35 | 50.19 | -21.84 | AVG | |
| 9 | 3.5060 | 26.50 | 10.44 | 36.94 | 56.00 | -19.06 | QP | |
| 10 | 3.5060 | 19.28 | 10.44 | 29.72 | 46.00 | -16.28 | AVG | |
| 11 | 12.5260 | 32.16 | 10.57 | 42.73 | 60.00 | -17.27 | QP | |
| 12 | 12.5260 | 26.15 | 10.57 | 36.72 | 50.00 | -13.28 | AVG | |

Neutral line:




| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB) | Result (dBuV) | Limit dBuV | Margin (dB) | Detector | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.1500 | 39.29 | 10.26 | 49.55 | 65.99 | -16.44 | QP | |
| 2 | 0.1500 | 20.10 | 10.26 | 30.36 | 55.99 | -25.63 | AVG | |
| 3 | 0.1780 | 36.71 | 10.24 | 46.95 | 64.57 | -17.62 | QP | |
| 4 | 0.1780 | 21.03 | 10.24 | 31.27 | 54.57 | -23.30 | AVG | |
| 5 | 0.2540 | 34.68 | 10.21 | 44.89 | 61.62 | -16.73 | QP | |
| 6 | 0.2540 | 25.39 | 10.21 | 35.60 | 51.62 | -16.02 | AVG | |
| 7 | 0.3780 | 28.01 | 10.20 | 38.21 | 58.32 | -20.11 | QP | |
| 8 | 0.3780 | 17.50 | 10.20 | 27.70 | 48.32 | -20.62 | AVG | |
| 9 | 3.4380 | 25.58 | 10.44 | 36.02 | 56.00 | -19.98 | QP | |
| 10 | 3.4380 | 19.47 | 10.44 | 29.91 | 46.00 | -16.09 | AVG | |
| 11 | 12.9340 | 30.32 | 10.62 | 40.94 | 60.00 | -19.06 | QP | |
| 12 | 12.9340 | 24.57 | 10.62 | 35.19 | 50.00 | -14.81 | AVG | |

# 8 Radiated Spurious Emissions

Test Requirement: FCC 47CFR part 15§15.209

Test Method: ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

FCC Part15 Paragraph 15.209

| Frequency (MHz) | Field Strength | | Field Strength Limit at 3m Measurement Dist | |
|---|---|---|---|---|
| | μV/m | Distance (m) | μV/m | dBμV/m |
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 | 10000 * 2400/F(kHz) | $20\log^{(2400/F(kHz))} + 80$ |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 | 100 * 24000/F(kHz) | $20\log^{(24000/F(kHz))} + 40$ |
| 1.705 ~ 30 | 30 | 30 | 100 * 30 | $20\log^{(30)} + 40$ |
| 30 ~ 88 | 100** | 3 | 100 | $20\log^{(100)}$ |
| 88 ~ 216 | 150** | 3 | 150 | $20\log^{(150)}$ |
| 216 ~ 960 | 200** | 3 | 200 | $20\log^{(200)}$ |
| Above 960 | 500 | 3 | 500 | $20\log^{(500)}$ |

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permItted under other sections of this part, e.g., §§15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
Note:
According to § 15.209(d), the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

According to § 15.31(f)(2):
3m Measurement level (dBμV/m) = 300m Measurement level (dBμV/m) + 40log (300/3) (dBμV/m).

## 8.1 EUT Operation

Operating Environment:

Temperature: 22.5 °C

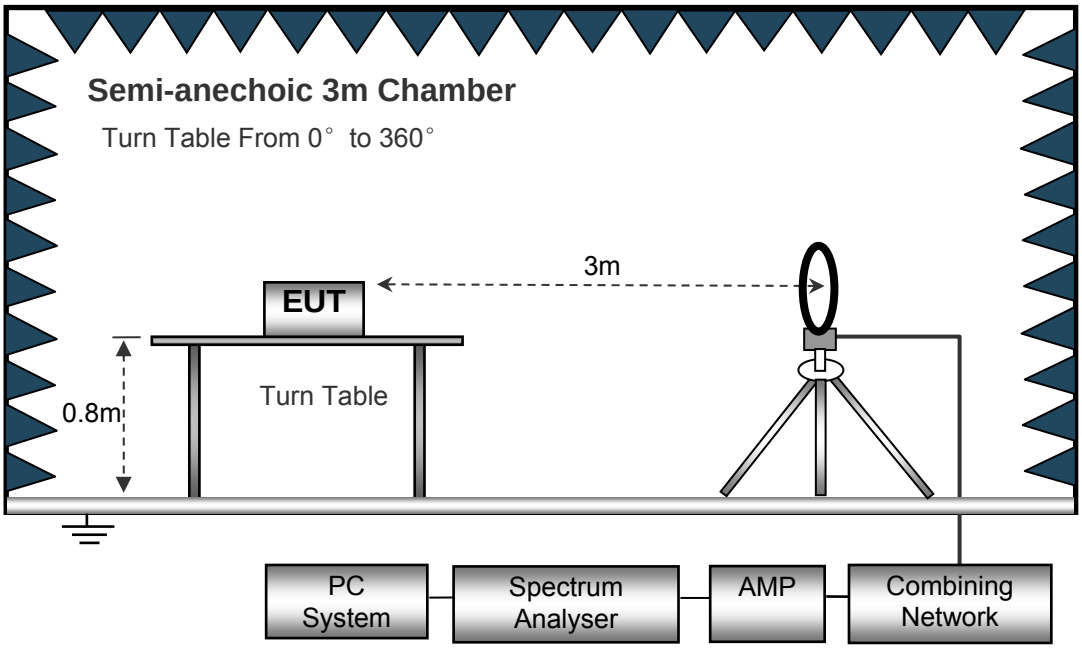
Humidity: 44.5 % RH

Atmospheric Pressure: 101.2kPa

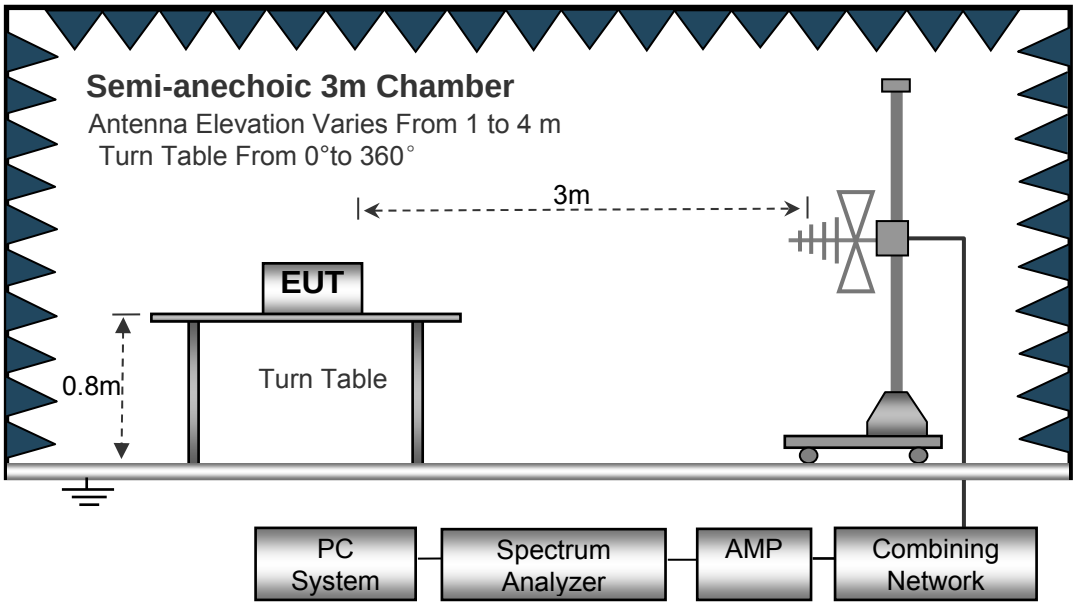
EUT Operation: Refer to section 4.6.

## 8.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI 63.10:2013.
The test setup for emission measurement below 30MHz.




The test setup for emission measurement above 30MHz and up to 1 000MHz.



## 8.3 Spectrum Analyzer Setup

All bands

Sweep time.....Auto

9kHz to 150kHz

Resolution Bandwidth.....0.1kHz

Video Bandwidth.....0.3kHz

150kHz to 30MHz

Resolution Bandwidth.....10kHz

Video Bandwidth.....30kHz

Above 30MHz

Resolution Bandwidth.....100kHz

Video Bandwidth.....300kHz

## 8.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane, EUT is set 3m away from the receiving antenna, which is 1.0m above ground plane (height of the centre of the loop above the GRP of the SAC is 1 m).
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And each emission was to be maximized by changing the polarization of receiving antenna both vertical coaxial and vertical coplanar.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes (X, Y, Z) position (X denotes lying on the table, Y denotes side stand and Z denotes vertical stand). After pre-test, it was found that the worse radiation emission was get at the Z position. So the data shown was the Z position only.

**Note:**
Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

Although these test were performed other than open area test site, adequate comparison measurements were confirmed against 300m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788 D01.

## 8.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

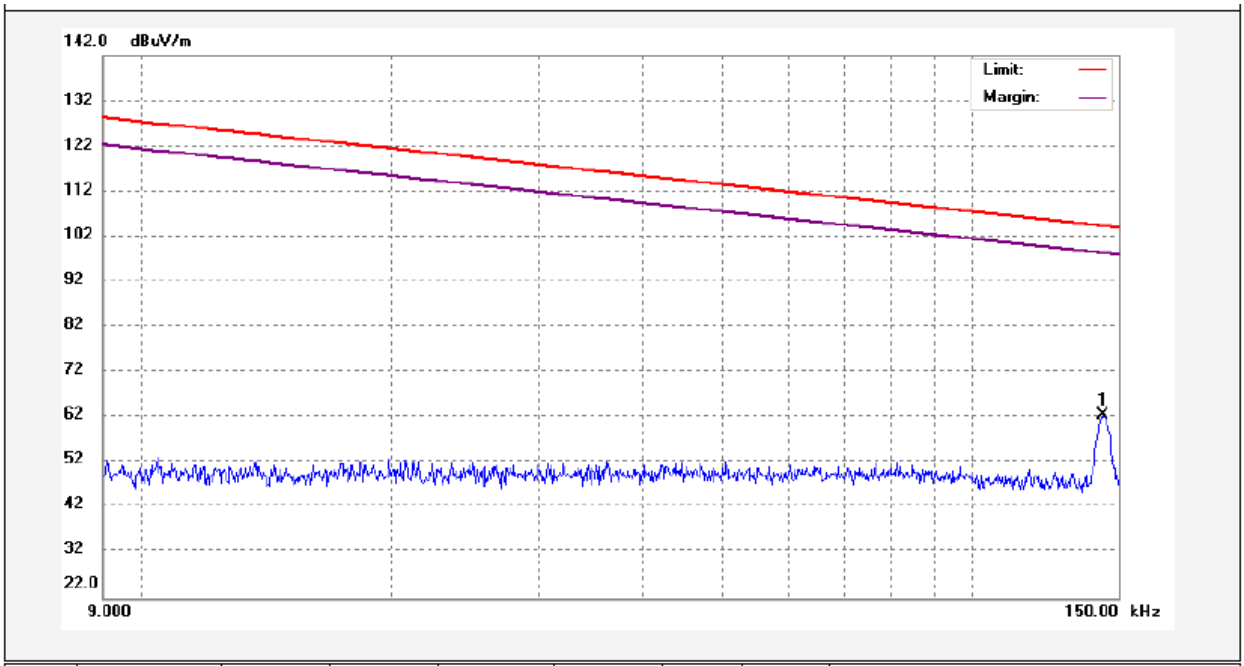
The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit

## 8.6 Summary of Test Results

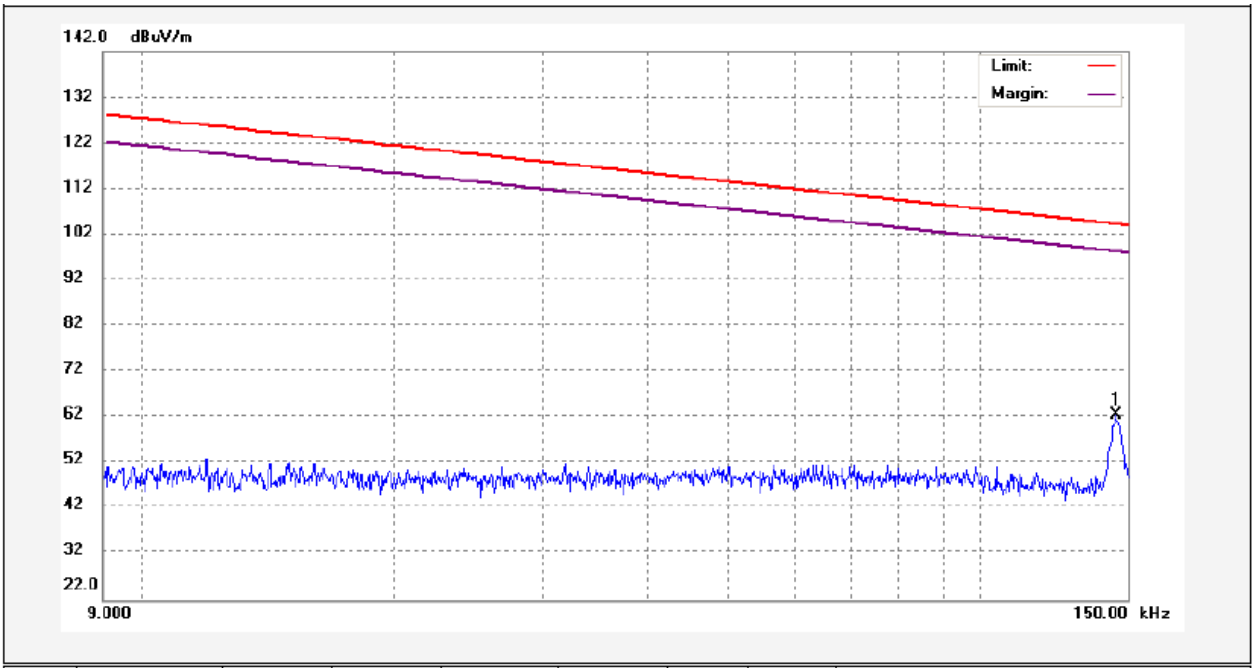
**Test Frequency: 9kHz ~ 150kHz**

Antenna Polarization: 0°




| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.1438 | 48.27 | 14.34 | 62.61 | 104.39 | -41.78 | peak | |

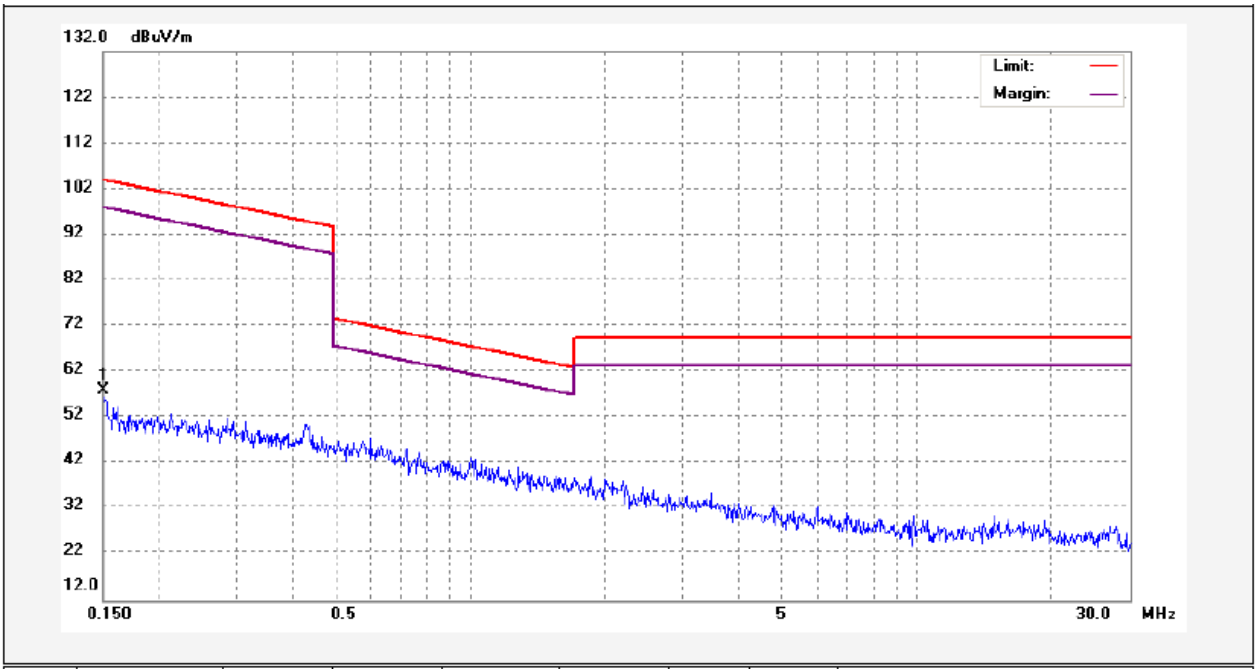
Antenna Polarization: 90°




| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.1450 | 48.29 | 14.33 | 62.62 | 104.35 | -41.73 | peak | |

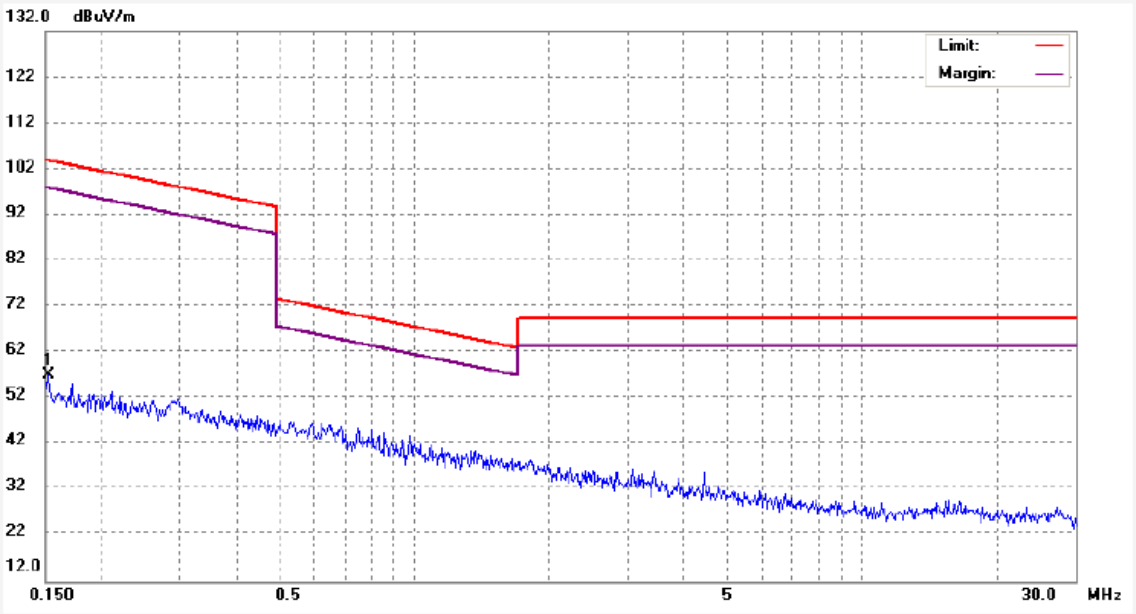
**Test Frequency: 150kHz ~ 30MHz**

Antenna Polarization: 0°




| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.1499 | 43.67 | 14.31 | 57.98 | 104.03 | -46.05 | peak | |

Antenna Polarization: 90°



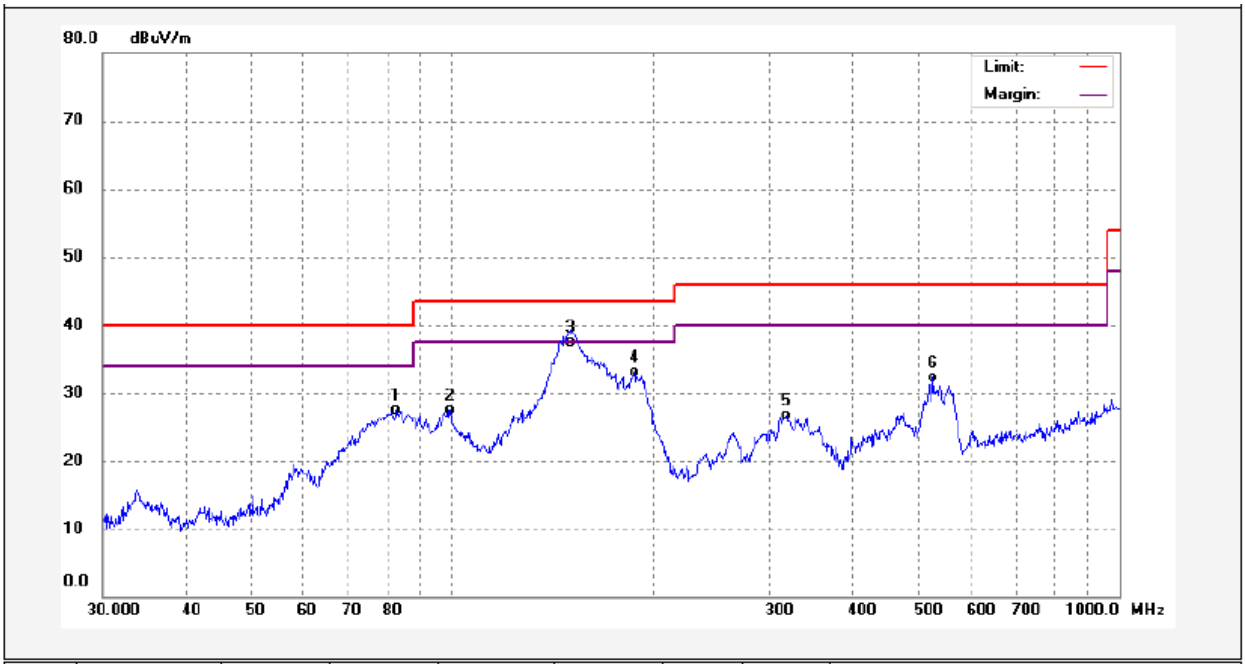

| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.1524 | 42.78 | 14.30 | 57.08 | 103.89 | -46.81 | peak | |

**Test Frequency: 30MHz ~ 1 000MHz**

Antenna Polarization: Vertical


| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 34.1561 | 51.32 | -17.99 | 33.33 | 40.00 | -6.67 | QP | |
| 2 | 58.4074 | 50.71 | -17.21 | 33.50 | 40.00 | -6.50 | QP | |
| 3 | 77.0505 | 53.85 | -20.55 | 33.30 | 40.00 | -6.70 | QP | |
| 4 | 98.8326 | 51.01 | -19.58 | 31.43 | 43.50 | -12.07 | QP | |
| 5 | 150.0108 | 52.70 | -15.30 | 37.40 | 43.50 | -6.10 | QP | |
| 6 | 515.4374 | 38.62 | -9.05 | 29.57 | 46.00 | -16.43 | QP | |

Antenna Polarization: Horizontal




| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 82.6482 | 48.81 | -21.38 | 27.43 | 40.00 | -12.57 | QP | |
| 2 | 99.5281 | 46.88 | -19.44 | 27.44 | 43.50 | -16.06 | QP | |
| 3 | 150.5378 | 52.81 | -15.31 | 37.50 | 43.50 | -6.00 | QP | |
| 4 | 187.7530 | 50.66 | -17.63 | 33.03 | 43.50 | -10.47 | QP | |
| 5 | 316.5890 | 41.04 | -14.41 | 26.63 | 46.00 | -19.37 | QP | |
| 6 | 526.3967 | 40.73 | -8.42 | 32.31 | 46.00 | -13.69 | QP | |

# 9 Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.215

Test Method: ANSI C63.10:2013

## 9.1 Test Procedure

1 The transmitter shall be operated at its maximum carrier power measured under normal test conditions;

2. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

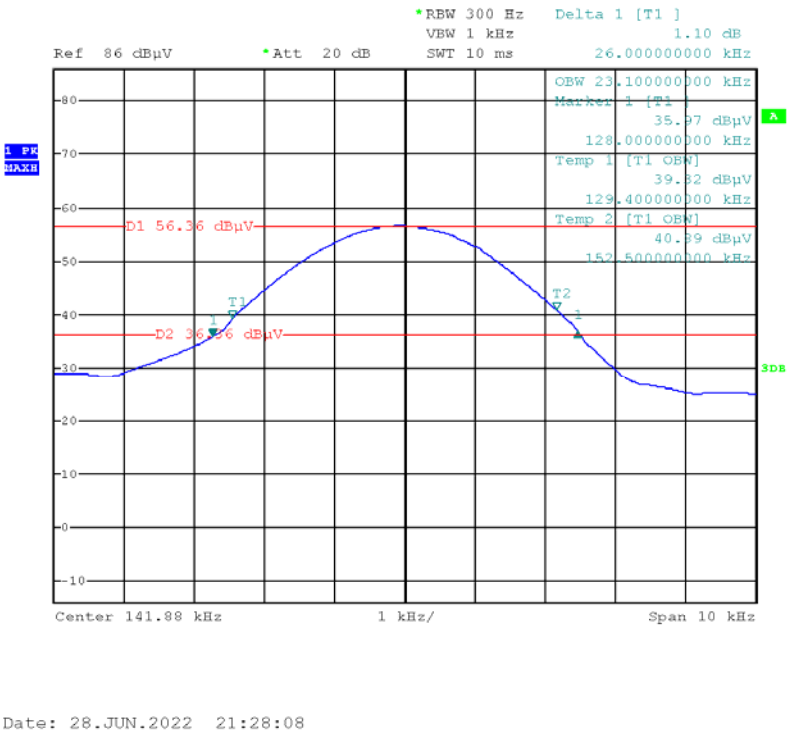
3. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW), video bandwidth (VBW) is set to approximately 3 times of the RBW.

4. Measured the spectrum width with power higher than 20dB below carrier and 99% Bandwidth.

## 9.2 Test Result

| Test Channel (kHz) | 99% Bandwidth (kHz) | 20dB Bandwidth Emission(kHz) |
|---|---|---|
| 141.85 | 23.1 | 26 |

**Test result plot as follows:**



# 10 Antenna Requirement

According to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

This product has an integrated antenna fulfil the requirement of this section.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement.

Antenna location: Refer to Appendix (Internal Photos).

# 11 RF Exposure

Note: Please refer to RF Exposure test report: WTD22D05089750W002.

# 12 Photographs of test setup and EUT

Note: Please refer to appendix: Appendix- EB150P-Photos.

====== End of Report ======