

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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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
(Adapter Input: 100-240V~50-60Hz 1.0A)
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 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 (dB μ V)	
	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

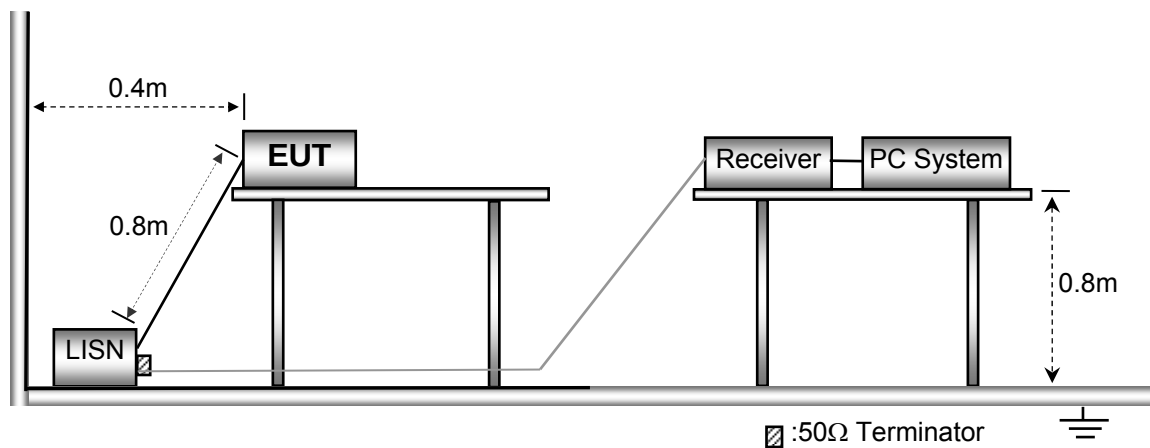
Humidity: 46.8 % RH

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.

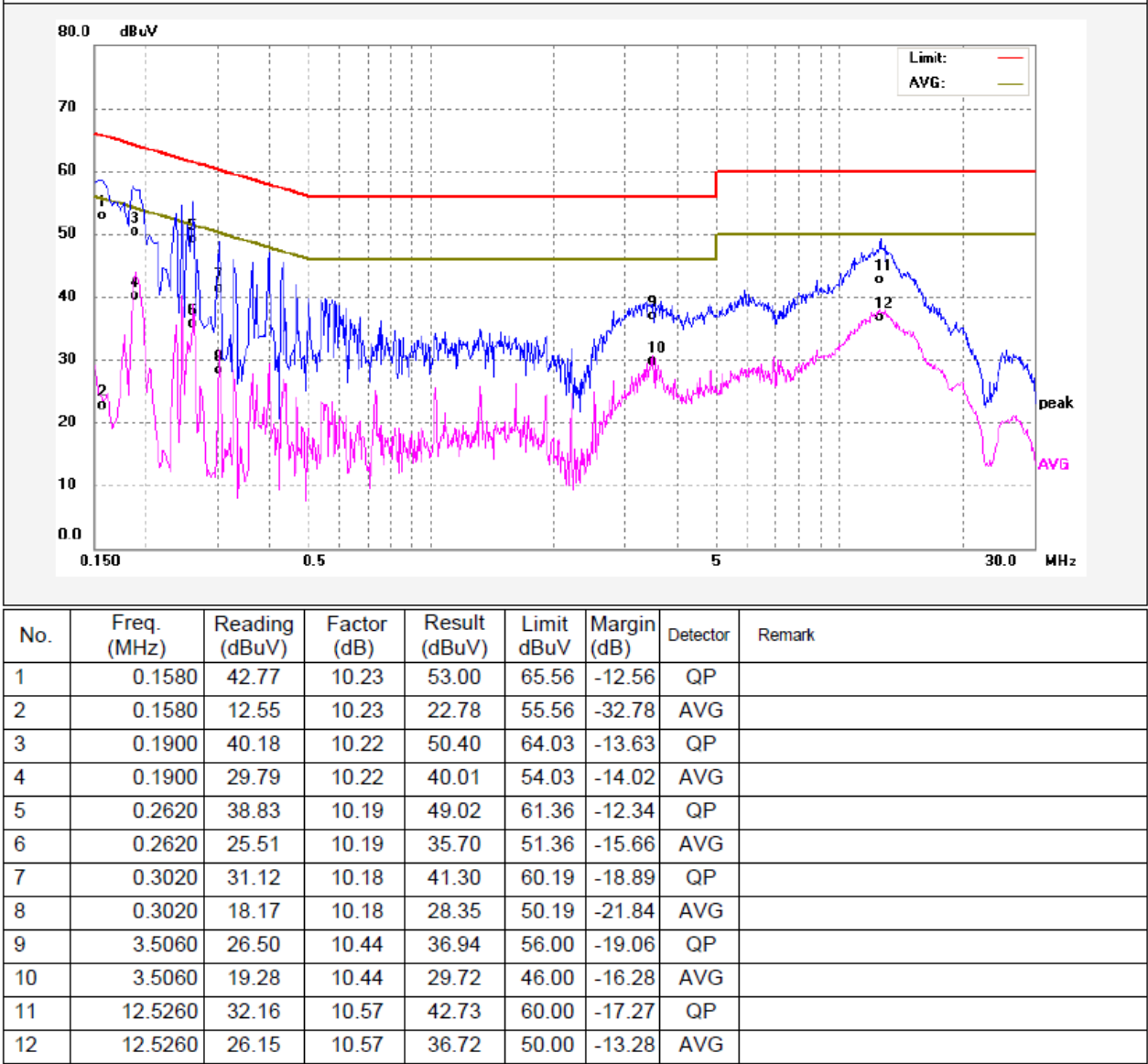


7.3 Measurement Description

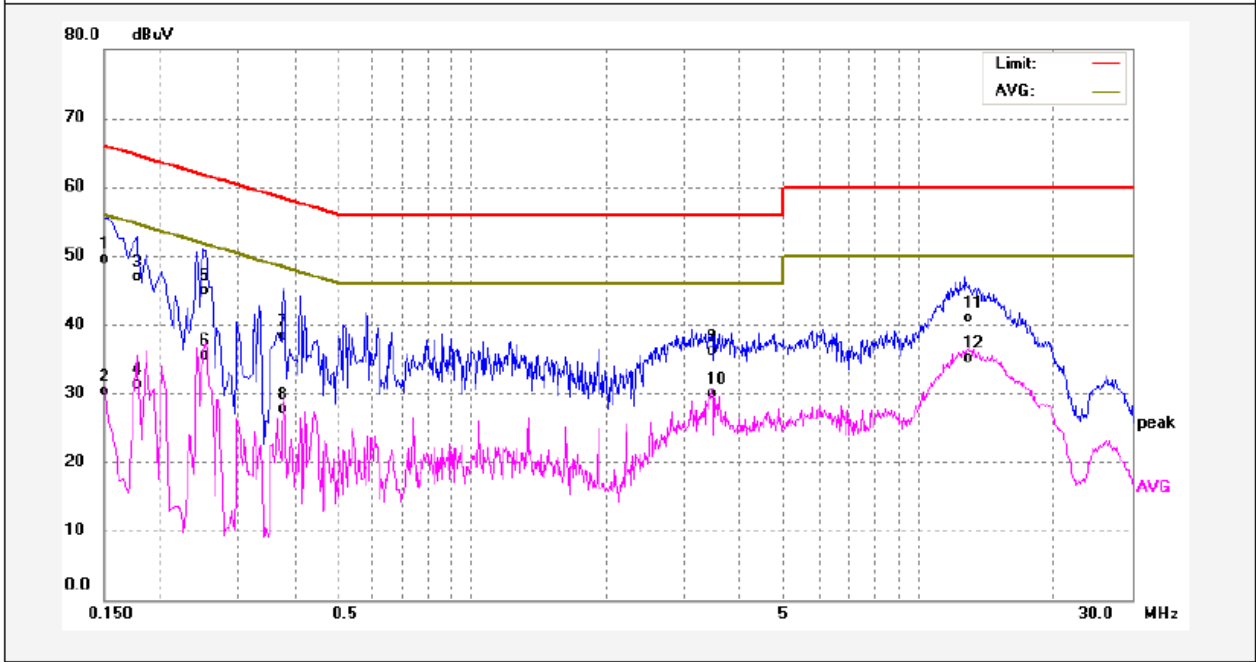
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

7.4 Conducted Emission Test Result

Live line:



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

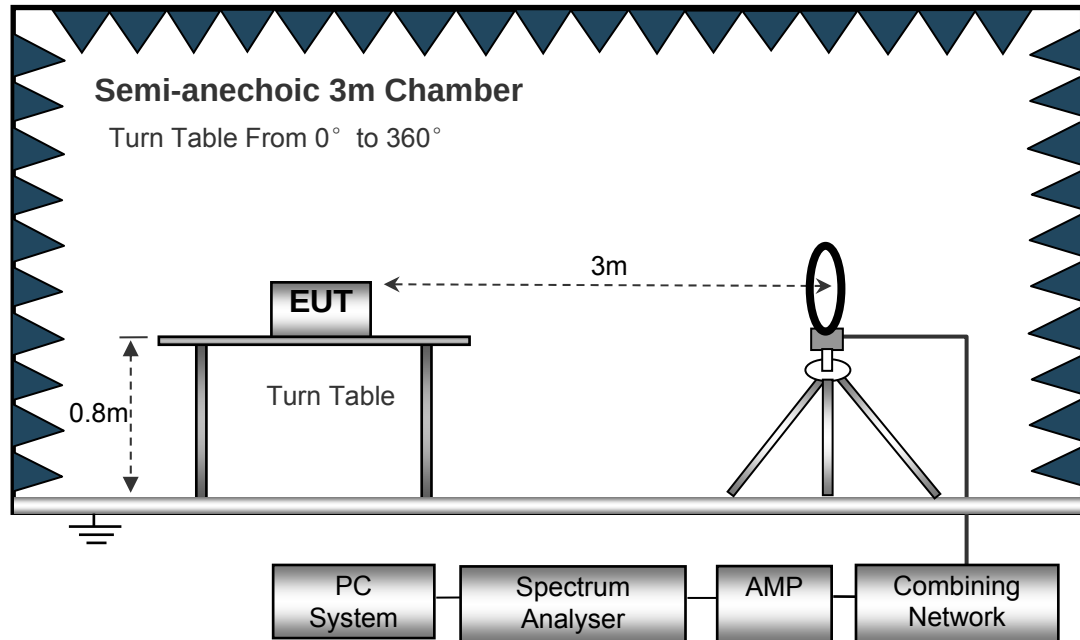
Atmospheric Pressure: 101.2kPa

EUT Operation: Refer to section 4.6.

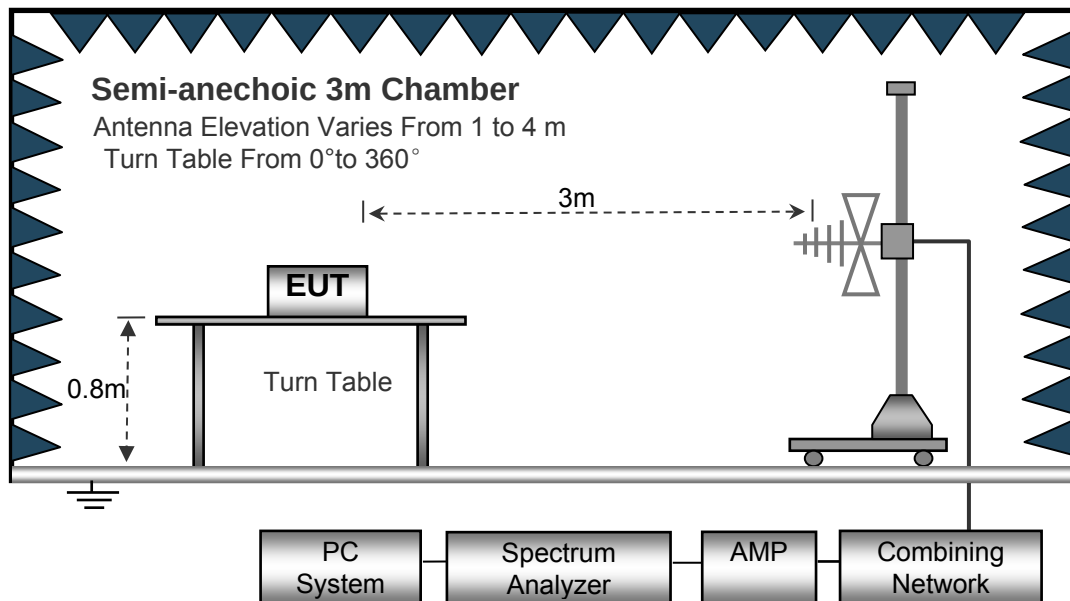
8.2 Test Setup

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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

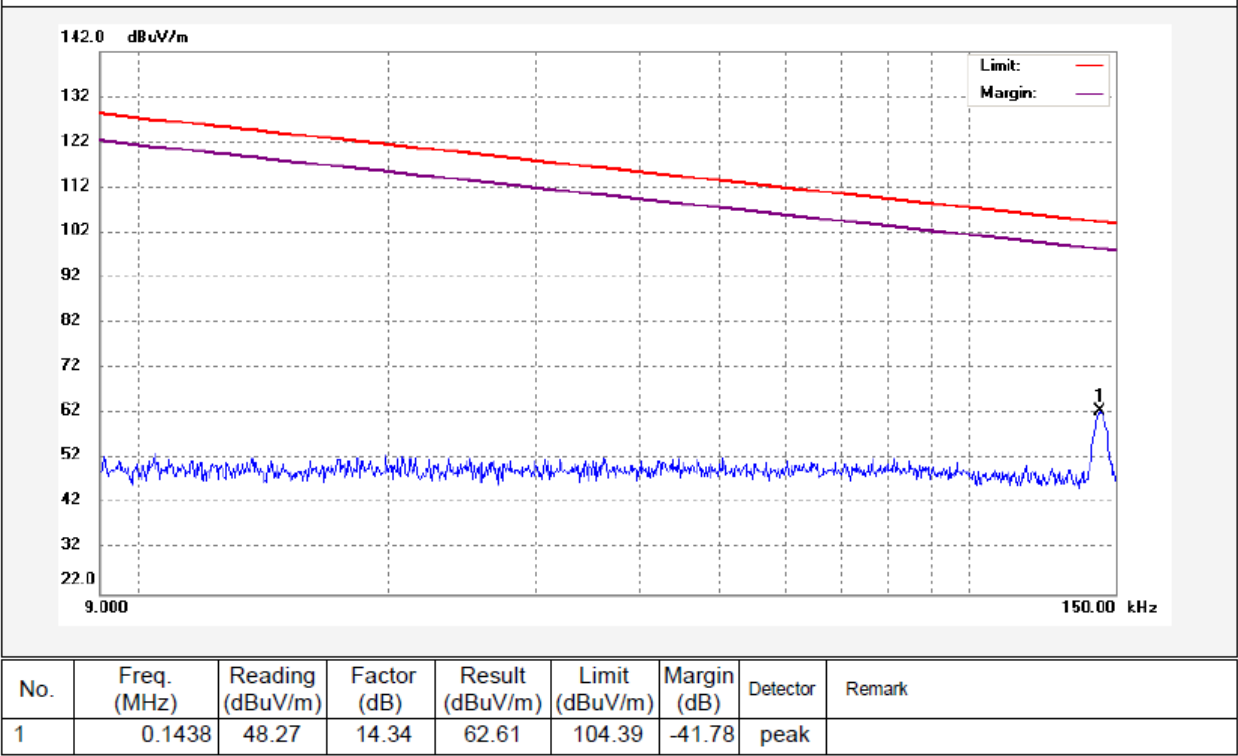
The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

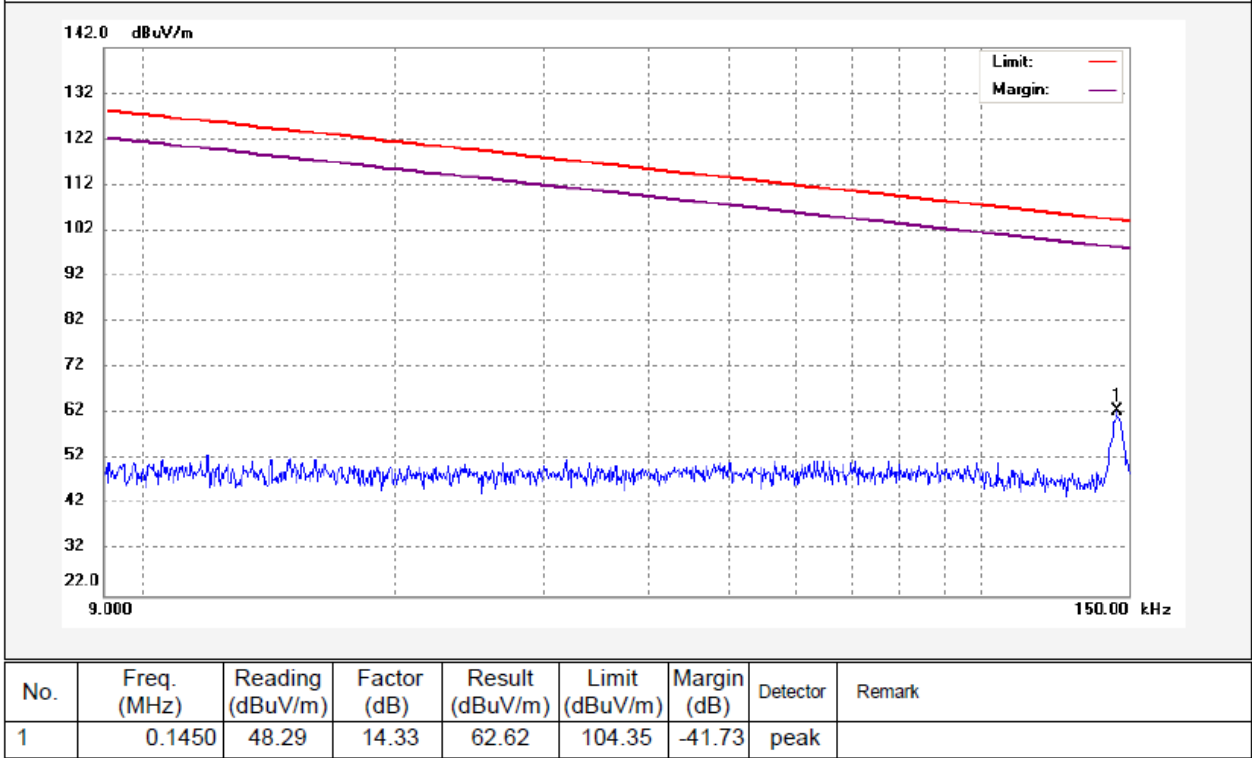
8.6 Summary of Test Results

Test Frequency: 9kHz ~ 150kHz

Antenna Polarization: 0°

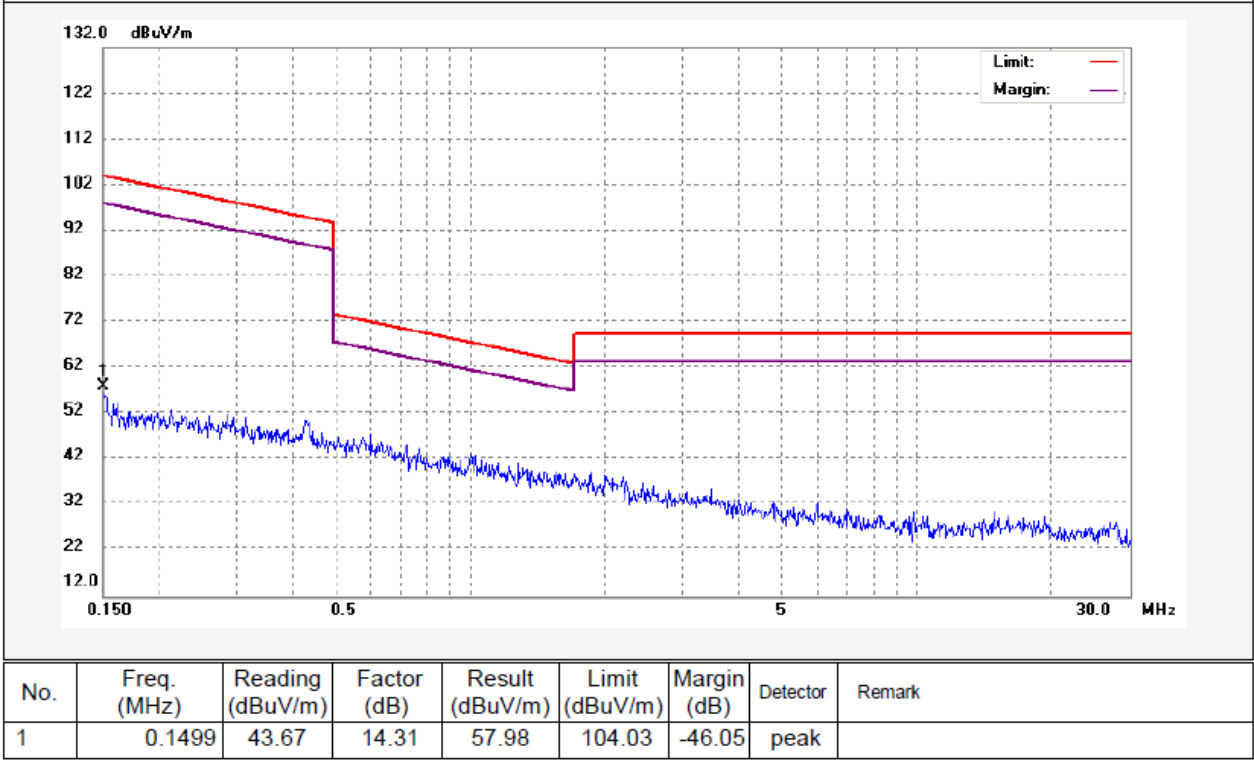


Antenna Polarization: 90°

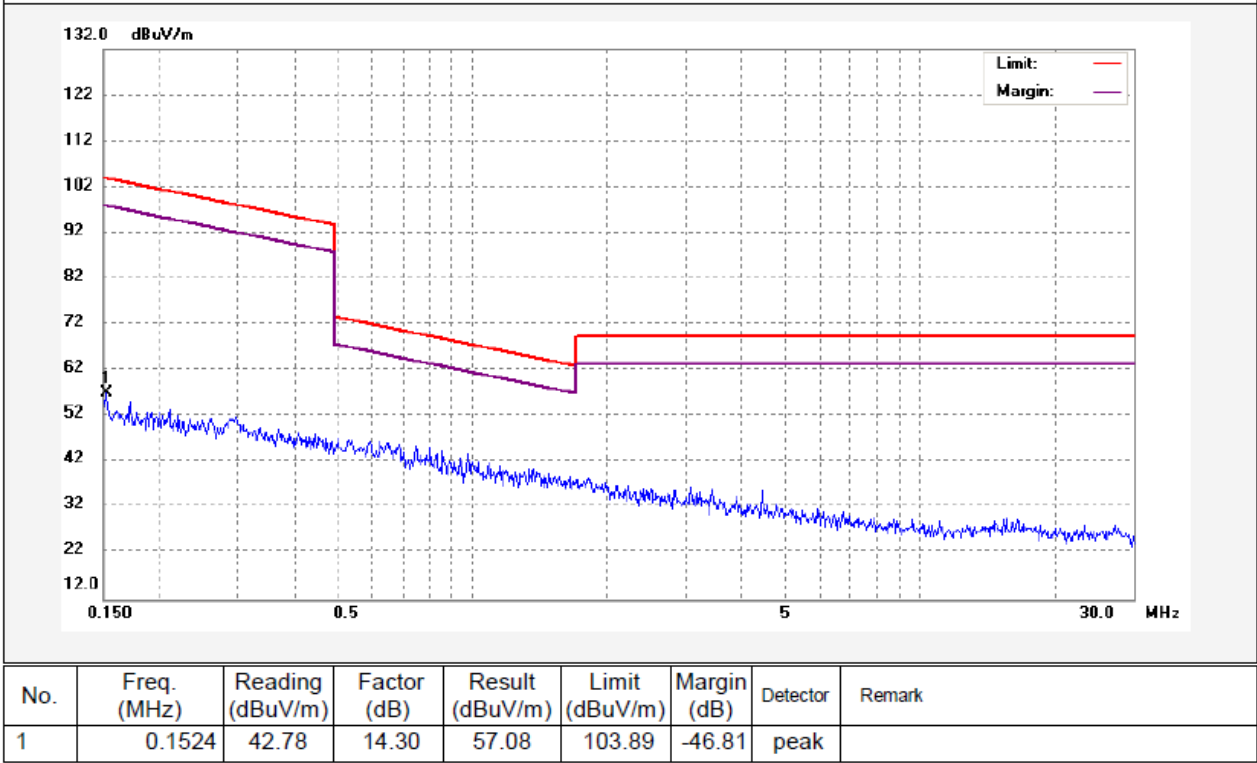


Test Frequency: 150kHz ~ 30MHz

Antenna Polarization: 0°



Antenna Polarization: 90°



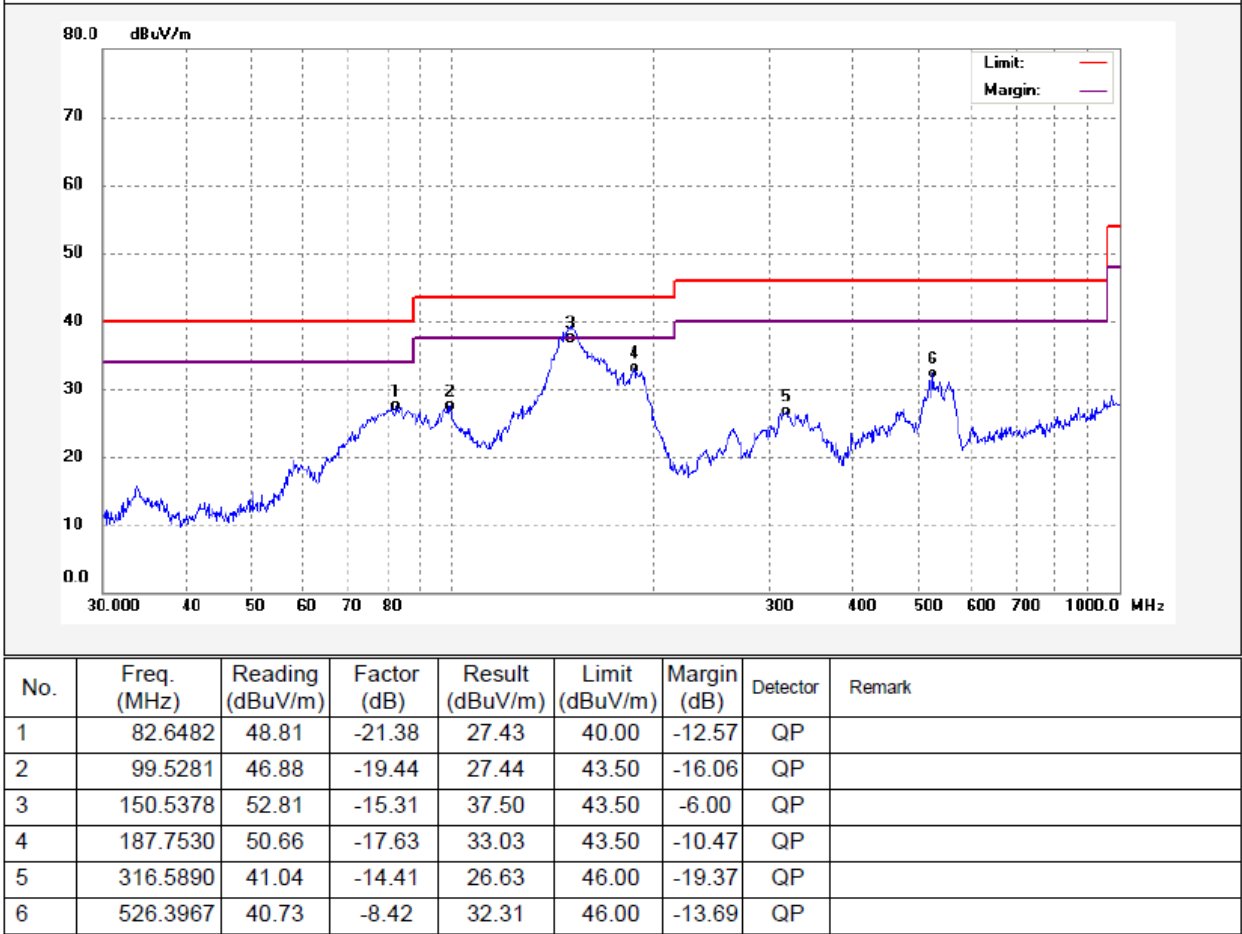
Test Frequency: 30MHz ~ 1 000MHz

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



9 Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.215

Test Method: ANSI C63.10:2013

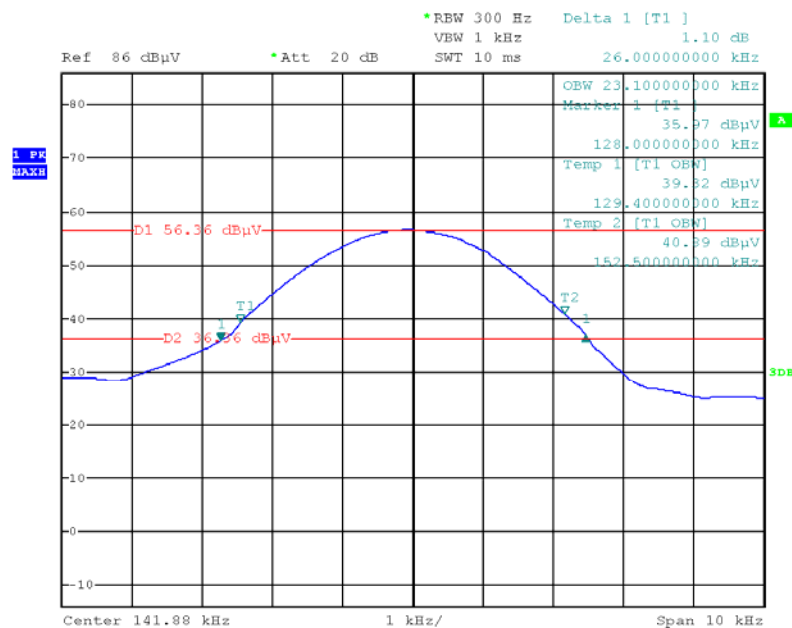
9.1 Test Procedure

- 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:



Date: 28.JUN.2022 21:28:08

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 =====