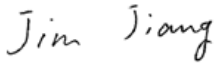
CTC Laboratories, Inc.

2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China
Tel : +86-0755-27521059 Fax: +86-0755-27521011 http://www.sz-ctc.org.cn

TEST REPORT

Report No. ·····:	**CTC20221069E01**
FCC ID·····:	**2ARVQ-ASWBATTERY**
Applicant·····:	**AUTOSLIDE PTY LTD**
Address·····:	Unit 3/413, VICTORIA STREET, WETHERILL PARK, 2164 NSW, AUSTRALIA
Manufacturer·····:	NINGBO DAOYI ENERGY TECHNOLOGY CO.,LTD
Address·····:	C2 Chuang ye Red, West Bonded Zone Ningbo, CHINA
Product Name·····:	**AWS-Battery**
Trade Mark·····:	/
Model/Type reference·····:	DY-6S1P18650-2103C
Listed Model ·····:	/
Standard·····:	**FCC CFR Title 47 Part 15 Subpart B**
Date of receipt of test sample…:	May 19, 2022
Date of testing……..:	May 19, 2022 to Jun. 6, 2022
Date of issue……....:	Jun. 7, 2022
Result……:	**PASS**

Compiled by: (Printed name+signature)	Jim Jiang	
Supervised by: (Printed name+signature)	Miller Ma	
Approved by: (Printed name+signature)	Totti Zhao	

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1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

FCC CFR Title 47 Part 15 Subpart B: Unintentional Radiators.
ICES-003 Issue 7: 2020: Information Technology Equipment (Including Digital Apparatus) — Limits and Methods of Measurement
ANSI C63.4: 2014: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz.

1.2 Report Version

Revised No.	Date of issue	Description
01	Jun. 7, 2022	Original

1.3 Test Description

Test procedures according to the technical standards:

FCC CFR Title 47 FCC Part 15 Subpart B / ICES-003 Issue 7				
Test Item	Standard Section		Result	Test Engineer
	FCC	IC		
Conducted Emission	15.107	3.2.1	Pass	Jim Jiang
Radiated Emission	15.109	3.2.2	Pass	Jim Jiang

Note:
1. The measurement uncertainty is not included in the test result.
2. N/A: means this test item is not applicable for this device according to the technology characteristic of device.

1.4 Test Facility

Address of the report laboratory

CTC Laboratories, Inc.

Add: 2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. 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 951311, Aug 26, 2017.

1.5 Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

Test	Measurement Frequency Range	U (dB)	NOTE
Conducted Emission	9kHz ~ 30MHz	3.08	Main Power Port
Conducted Emission	150kHz ~ 30MHz	4.26	Telecommunication
Power disturbance	30MHz ~ 300MHz	2.38	Clamp
Conducted Emission	30MHz ~ 2150MHz	4.2	Antenna Port
Radiated Emission	30MHz ~ 1000MHz	4.51	3m chamber 2
Radiated Emission	1GHz ~ 18GHz	5.84	3m chamber 2
Radiated Emission	30MHz ~ 1000MHz	4.52	10m chamber
Radiated Emission	30MHz ~ 1000MHz	4.5	3m chamber 3
Radiated Emission	1GHz ~ 18GHz	5.7	3m chamber 3

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.6 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature	20~25 °C
Lative Humidity	50~55 %RH
Atmospheric Pressure	101 kPa

2 GENERAL INFORMATION

2.1 Client Information

Applicant:	AUTOSLIDE PTY LTD
Address:	Unit 3/413, VICTORIA STREET, WETHERILL PARK, 2164 NSW, AUSTRALIA
Manufacturer:	NINGBO DAOYI ENERGY TECHNOLOGY CO.,LTD
Address:	C2 Chuang ye Red, West Bonded Zone Ningbo, CHINA

2.2 General Description of EUT

Product Name:	AWS-Battery
Trade Mark:	/
Model/Type reference:	DY-6S1P18650-2103C
Listed Model(s):	/
Model Difference:	/
Power supply:	Rating: 21.6V 3200mAh 69.12Wh Charge voltage: 25.2V
Hardware version:	/
Software version:	/
Note:	The maximum operating frequency of EUT is less than 108MHz.

2.3 Accessory Equipment Information

Equipment Information			
Name	Model	S/N	Manufacturer
DC Power Supply	E3642A	/	KEYSIGHT
Cable Information			
Name	Shielded Type	Ferrite Core	Length
/	/	/	/

2.4 Description of Test Modes

Test mode	Description
1	Charge (Input 25.2V)
2	Discharge (Full load)

Pre-scan above all test mode, found below test mode which it was worse case mode, so only show the test data for worse case mode on the test report.

Test item	Test mode (Worse case mode)
Conducted emission	1
Radiated emission(Below 1GHz)	1
Radiated emission(Above 1GHz)	N/A

N/A is not applicable.

2.5 Measurement Instruments List

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	LISN	R&S	ENV216	101112	Dec. 23, 2022
2	LISN	R&S	ENV216	101113	Dec. 23, 2022
3	EMI Test Receiver	R&S	ESCS30	100353	Dec. 23, 2022
4	ISN CAT6	Schwarzbeck	NTFM 8158	CAT6-8158-0046	Dec. 23, 2022
5	ISN CAT5	Schwarzbeck	NTFM 8158	CAT5-8158-0046	Dec. 23, 2022

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-759	Nov. 09, 2022
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 23, 2022
3	Test Receiver	Keysight	N9038A	MY56400071	Dec. 23, 2022
4	Broadband Premplifier	SCHWARZBECK	BBV9743B	259	Dec. 23, 2022
5	Mirowave Broadband Amplifier	SCHWARZBECK	BBV9718C	111	Dec. 23, 2022
6	3m chamber 3	YIHENG	EE106	/	Sep. 09, 2023

Note: The Cal. Interval was one year.

3 EMC EMISSION TEST

3.1 Conducted Emission

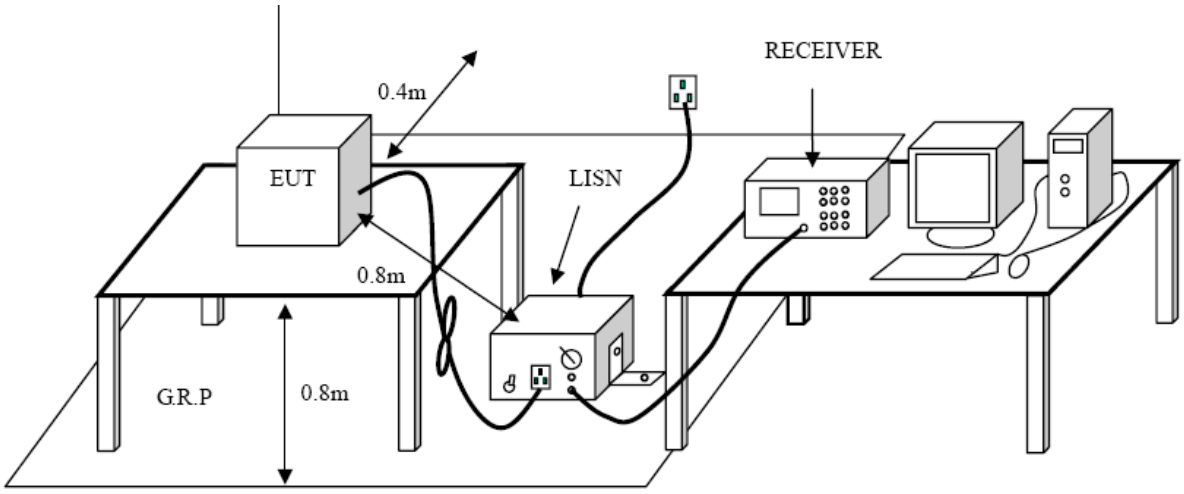
LIMIT

FCC CFR Title 47 Part 15 Subpart Section B 15.107/ ICES 003 Section 3.2.1.

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56 *	56 - 46 *
0.5 - 5	73	60	56	46
5 - 30	73	60	60	50

*** Decreases with the logarithm of the frequency.**

TEST SETUP



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.4-2014.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs).
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHzusing a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

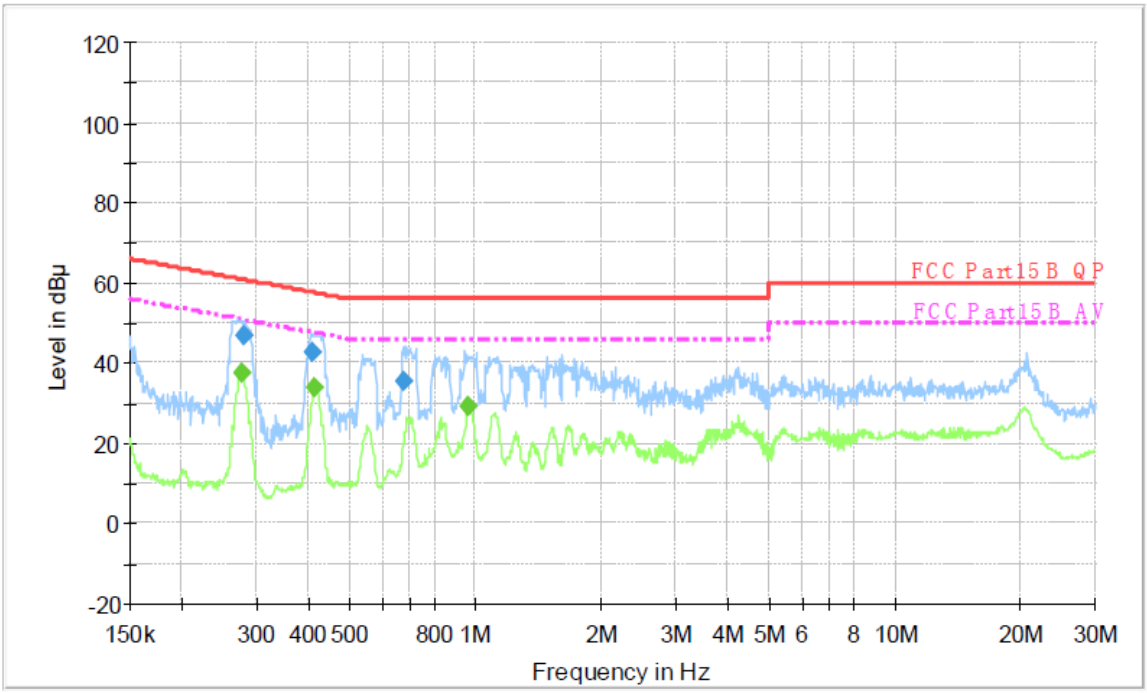
TEST MODE

Please refer to the clause 2.4.

TEST RESULT

Note:
Factor = Insertion loss of LISN + Cable Loss
Limit = Limit stated in standard
Margin = Limit (dBuV) – Result (dBuV)

Test Mode	Mode 1	Terminal	Line



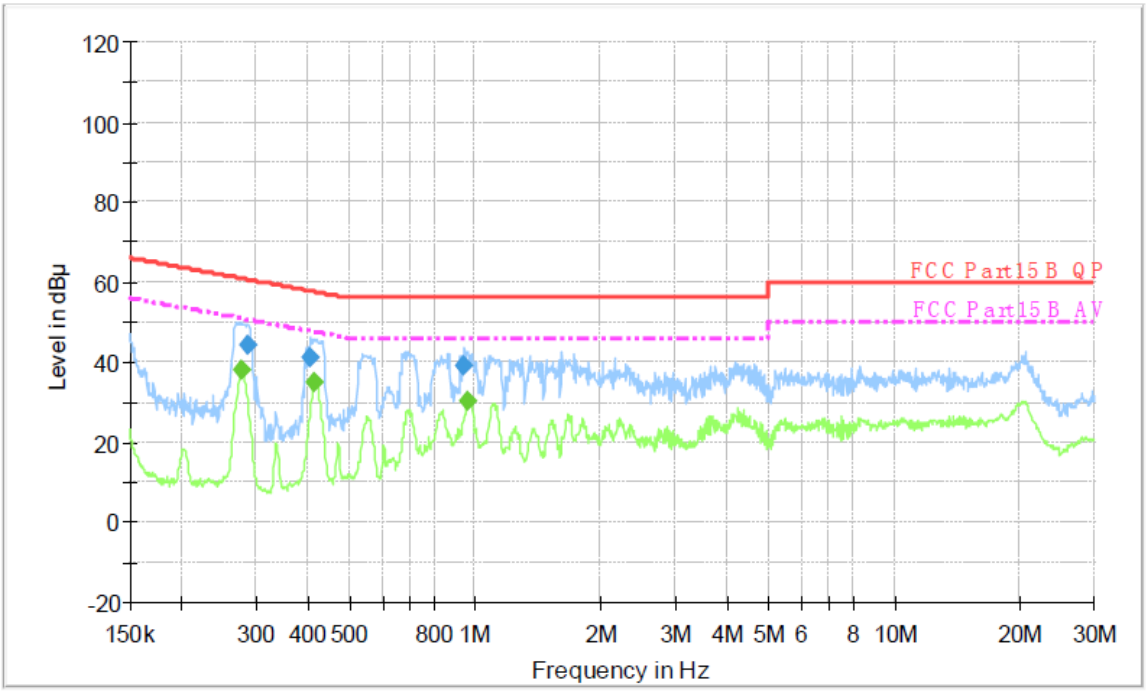
Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.281850	46.9	1000.00	9.000	On	L1	9.7	13.9	60.8	
0.408560	42.9	1000.00	9.000	On	L1	9.7	14.8	57.7	
0.672930	35.6	1000.00	9.000	On	L1	9.7	20.4	56.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.276280	37.7	1000.00	9.000	On	L1	9.7	13.2	50.9	
0.415130	33.8	1000.00	9.000	On	L1	9.7	13.7	47.5	
0.963830	29.3	1000.00	9.000	On	L1	9.7	16.7	46.0	

Test Mode	Mode 1	Terminal	Neutral



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.288680	44.1	1000.00	9.000	On	N	10.0	16.5	60.6	
0.403690	41.3	1000.00	9.000	On	N	10.0	16.5	57.8	
0.941020	39.0	1000.00	9.000	On	N	10.0	17.0	56.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.277390	37.9	1000.00	9.000	On	N	10.0	13.0	50.9	
0.415130	35.0	1000.00	9.000	On	N	10.0	12.5	47.5	
0.959990	30.0	1000.00	9.000	On	N	10.0	16.0	46.0	

3.2 Radiated Emission

LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.109

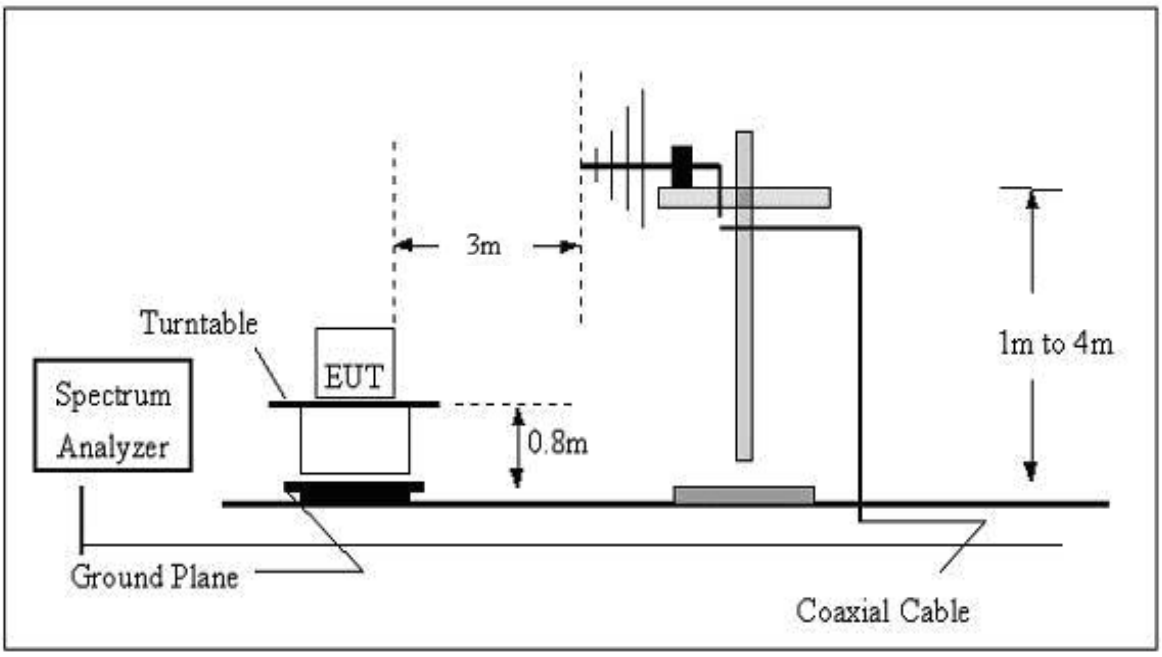
Frequency (MHz)	Class A (at 3m)	Class B (at 3m)	Value
	dBuV/m	dBuV/m	
30 ~ 88	49.0	40.0	Quasi-peak
88 ~ 216	53.5	43.5	Quasi-peak
216 ~ 960	56.0	46.0	Quasi-peak
960 ~ 1000	59.5	54.0	Quasi-peak
Above 1000	80.0	74.0	Peak
	60.0	54.0	Average

ICES 003 Section 3.2.2

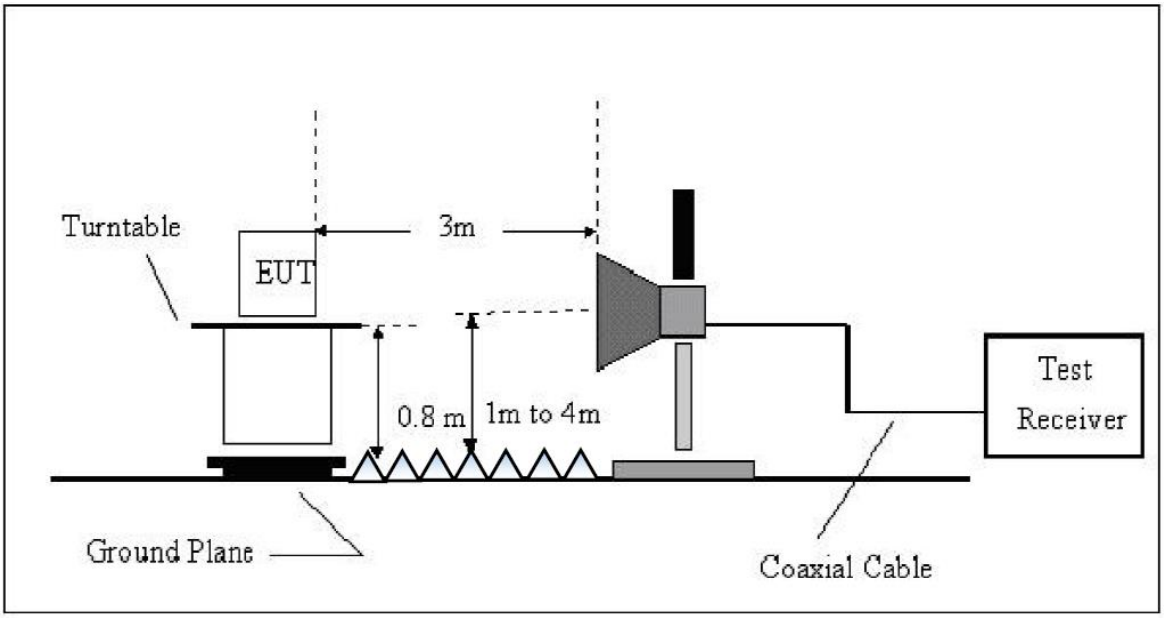
Frequency (MHz)	Class A (at 3m)	Class B (at 3m)	Value
	dBuV/m	dBuV/m	
30 ~ 88	50.0	40.0	Quasi-peak
88 ~ 216	54.0	43.5	Quasi-peak
216 ~ 230	56.9	46.0	Quasi-peak
230 ~ 960	57.0	47.0	Quasi-peak
960 ~ 1000	60.0	54.0	Quasi-peak
Above 1000	80.0	74.0	Peak
	60.0	54.0	Average

TEST SETUP

A Radiated Emission Test Set-Up Frequency below 1 GHz.



B Radiated Emission Test Set-Up Frequency above 1GHz.



TEST PROCEDURE

1. The EUT was tested according to ANSI C63.4:2014.
2. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna.
5. The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
6. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
7. For the actual test configuration, please refer to the related Item –EUT Test Photos.

TEST MODE

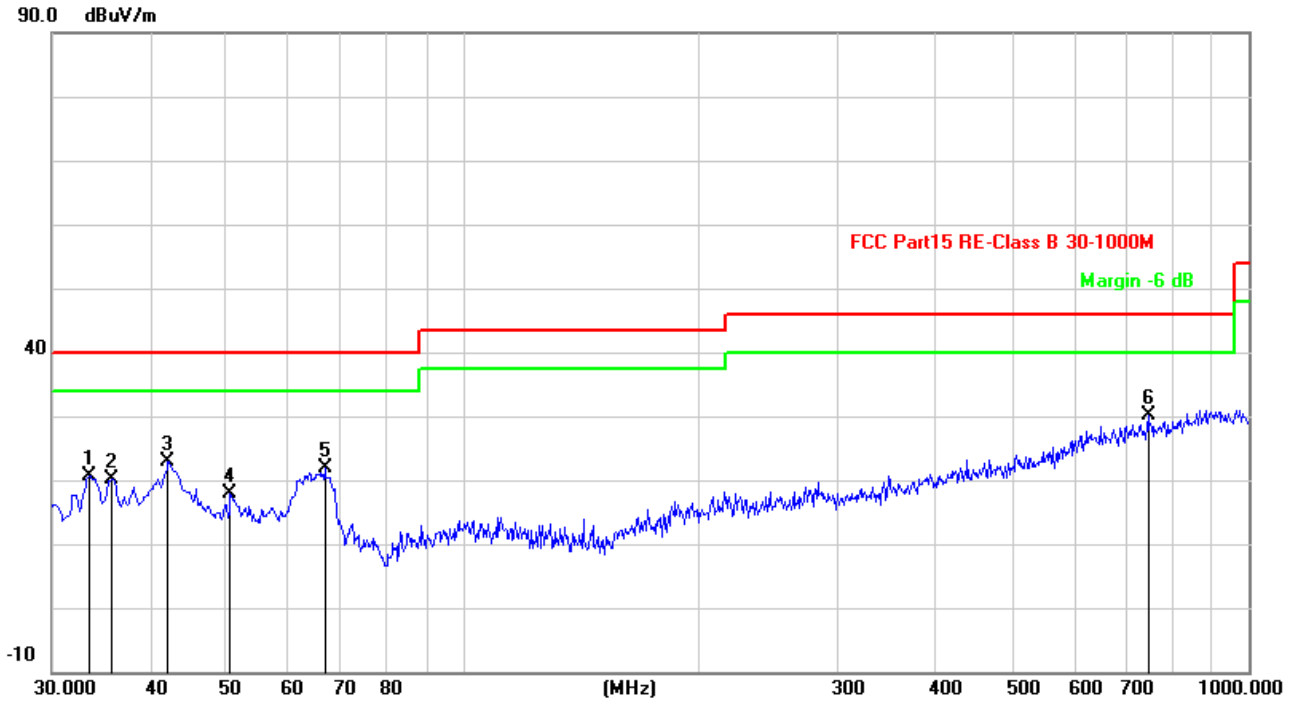
Please refer to the clause 2.4.

TEST RESULT

Remark:
Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) - Pre-amplifier Factor
Margin value = Level – Limit value

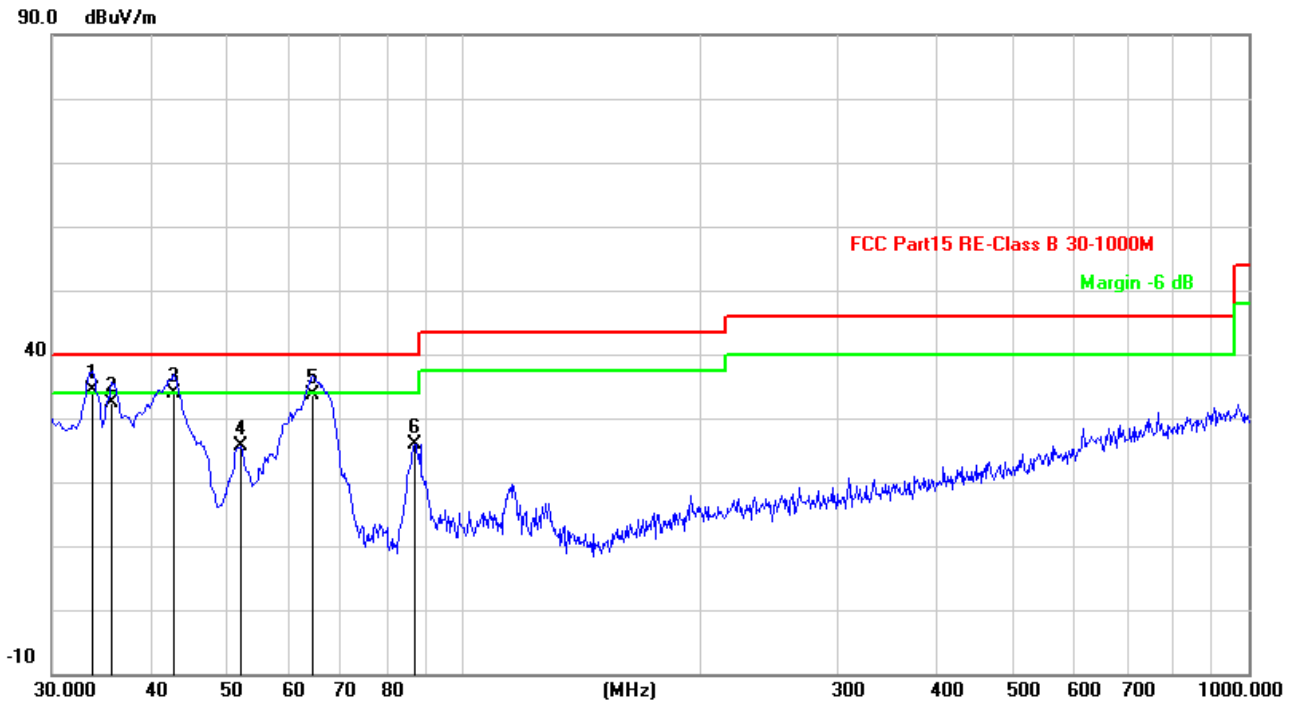
Below 1000MHz

Test mode	Mode 1
Polarization	Horizontal



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.5567	-16.05	36.66	20.61	40.00	-19.39	QP
2	35.8200	-15.84	36.06	20.22	40.00	-19.78	QP
3	42.2867	-14.42	37.27	22.85	40.00	-17.15	QP
4	50.6933	-14.42	32.40	17.98	40.00	-22.02	QP
5	66.8600	-17.67	39.46	21.79	40.00	-18.21	QP
6	746.8300	-4.87	35.00	30.13	46.00	-15.87	QP

Test mode	Mode 1
Polarization	Vertical



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.8800	-16.05	50.35	34.30	40.00	-5.70	QP
2	35.8200	-15.84	48.34	32.50	40.00	-7.50	QP
3	42.9333	-14.33	48.13	33.80	40.00	-6.20	QP
4	52.3100	-14.68	40.36	25.68	40.00	-14.32	QP
5	64.5967	-17.09	50.69	33.60	40.00	-6.40	QP
6	86.9067	-18.74	44.68	25.94	40.00	-14.06	QP

**********THE END**********