

TEST REPORT

Applicant: Xun Long Toy Factory

Address of Applicant: No.16 West Seventh Lane Huatian Road, Xiajiao Village, Cheng Hua Street, Chenghai District, Shantou City, Guangdong Province, China

Manufacturer: Xun Long Toy Factory

Address of Manufacturer: No.16 West Seventh Lane Huatian Road, Xiajiao Village, Cheng Hua Street, Chenghai District, Shantou City, Guangdong Province, China

Equipment Under Test (EUT)

Product Name: Remote control toy car

Model No.: See section 5.1

FCC ID: 2BEGO-1216

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.227

Date of sample receipt: December 25, 2023

Date of Test: December 26, 2023-January 10, 2024

Date of report issued: January 10, 2024

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Luo

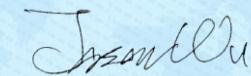
Laboratory Manager

This 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.

2 Version

Version No.	Date	Description
01	January 10, 2024	Original

Prepared By:



Date:

January 10, 2024

Project Engineer

Check By:



Date:

January 10, 2024

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna Requirement	15.203/15.227	Pass
AC Power Line Conducted Emission	15.207	N/A
20dB Bandwidth	15.215(c)	Pass
Field Strength of the Fundamental Signal	15.227(a)	Pass
Radiated Emissions	15.227(b) & C 15.209	Pass

Remarks:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *N/A: Not applicable. The product does not work while charging.*
3. *Test according to ANSI C63.10:2013*

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz-30MHz	3.1dB	(1)
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 General Description of EUT

Product Name:	Remote control toy car
Model No.:	1210, 1211, 1212, 1213, 1214, 1215, 1216, 1216-1, 1216-2, 1216-3, 1216-4, 1216-5, 1216-6, 1216-7, 1216-8, 1216-9, 1216-10, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 288, YF668-P6A, YF668-P7A, YF668-P1A, YF668-19
Test Model No.:	1216
Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are appearance color and model name for commercial purpose.	
Serial No.:	N/A
Test sample(s) ID:	GTS2023120268-1
Sample(s) Status:	Engineer sample
Operation Frequency:	27.145MHz
Channel Number:	1
Modulation:	AM
Antenna type:	Spring antenna
Antenna gain:	0dBi(Declared by applicant)
Power supply:	TX: DC 3.0V (1.5V x 2 "AA" Size Batteries)

Remark:

1. Antenna gain information provided by the customer
2. The relevant information of the sample is provided by the entrusting company, and the laboratory is not responsible for its authenticity.
3. The report is for TX device only.

5.2 Test mode

Transmitter mode	Keep the EUT in continuously transmitting.		
Remark: new battery is used during all test.			

Pre-test mode.

GTS has verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

Axis	X	Y	Z
Field Strength(dBuV/m)	51.67	52.42	50.47

Final Test Mode:

According to ANSI C63.10 standards, the test results are both the “worst case” and “worst setup”: Y axis (see the test setup photo)

5.3 Description of Support Units

None.

5.4 Test Facility

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

- **FCC—Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen 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 files.

- **ISED—Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of ISED for radio equipment testing

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

6 Equipment List

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	June 23, 2021	June 22, 2024
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 14, 2023	April 13, 2024
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 19, 2023	March 18, 2025
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	April 17, 2023	April 16, 2025
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 14, 2023	April 13, 2024
8	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 13, 2023	Nov.12, 2024
9	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 14, 2023	April 13, 2024
10	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 14, 2023	April 13, 2024
11	Horn Antenna (18-26.5GHz)	/	UG-598A/U	GTS664	Oct. 29, 2023	Oct. 28, 2024
12	Horn Antenna (26.5-40GHz)	A.H Systems	SAS-573	GTS665	Oct. 29, 2023	Oct. 28, 2024
13	FSV·Signal Analyzer (10Hz-40GHz)	Keysight	FSV-40-N	GTS666	March 13, 2023	March 12, 2024
14	Amplifier	/	LNA-1000-30S	GTS650	April 14, 2023	April 13, 2024
15	CDNE M2+M3-16A	HCT	30MHz-300MHz	GTS692	Nov. 08, 2023	Nov.07, 2024
16	Wideband Amplifier	/	WDA-01004000-15P35	GTS602	April 14, 2023	April 13, 2024
17	Thermo meter	JINCHUANG	GSP-8A	GTS643	April 19, 2023	April 18, 2024
18	RE cable 1	GTS	N/A	GTS675	July 31. 2023	July 30. 2024
19	RE cable 2	GTS	N/A	GTS676	July 31. 2023	July 30. 2024
20	RE cable 3	GTS	N/A	GTS677	July 31. 2023	July 30. 2024
21	RE cable 4	GTS	N/A	GTS678	July 31. 2023	July 30. 2024
22	RE cable 5	GTS	N/A	GTS679	July 31. 2023	July 30. 2024
23	RE cable 6	GTS	N/A	GTS680	July 31. 2023	July 30. 2024
24	RE cable 7	GTS	N/A	GTS681	July 31. 2023	July 30. 2024
25	RE cable 8	GTS	N/A	GTS682	July 31. 2023	July 30. 2024

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 14, 2023	April 13, 2024
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 14, 2023	April 13, 2024
3	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	April 14, 2023	April 13, 2024
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 14, 2023	April 13, 2024
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 14, 2023	April 13, 2024
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 14, 2023	April 13, 2024
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 14, 2023	April 13, 2024
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 14, 2023	April 13, 2024
9	Thermo meter	JINCHUANG	GSP-8A	GTS641	April 19, 2023	April 18, 2024

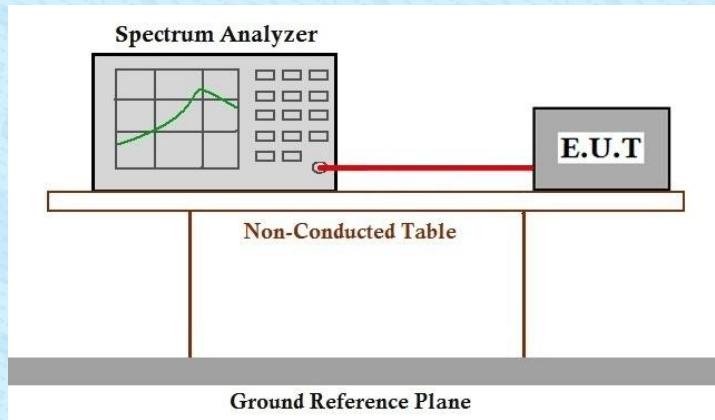
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	KUMAO	SF132	GTS647	April 19, 2023	April 18, 2024

7 Test results and Measurement Data

7.1 Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
The antenna is spring antenna, reference to the appendix II for details.	

7.2 20dB Bandwidth

Test Requirement:	47 CFR Part 15, Subpart C 15.215(c)					
Test Method:	ANSI C63.10:2013					
Test setup:						
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar
Test Instruments:	Refer to section 6 for details					
Test mode:	Refer to section 5.2 for details					
Test results:	Pass					

Measurement data:

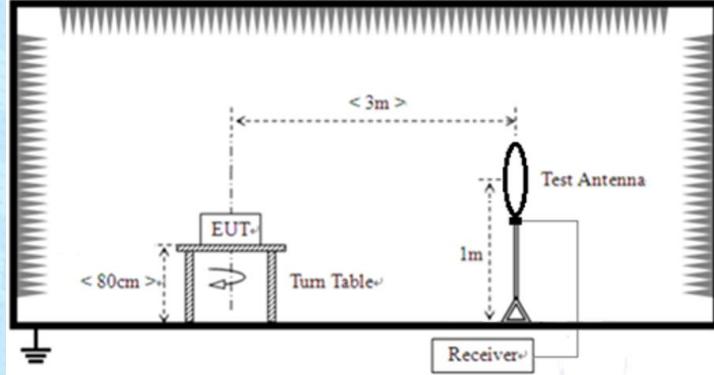
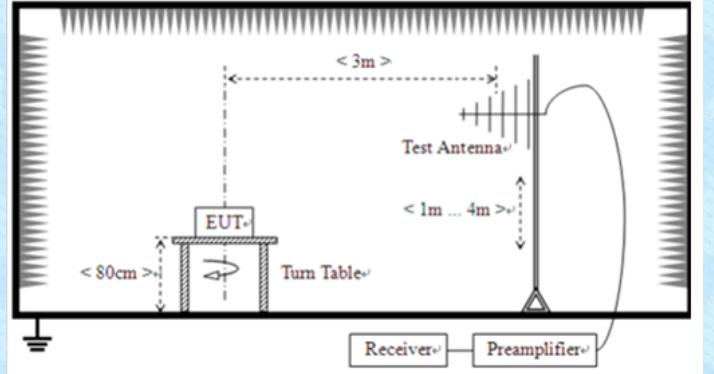
Mode	Frequency (MHz)	-20dB Bandwidth (kHz)	Limit	Conclusion
TX	27.145	163.1	N/A	Pass

Test plot as follows:

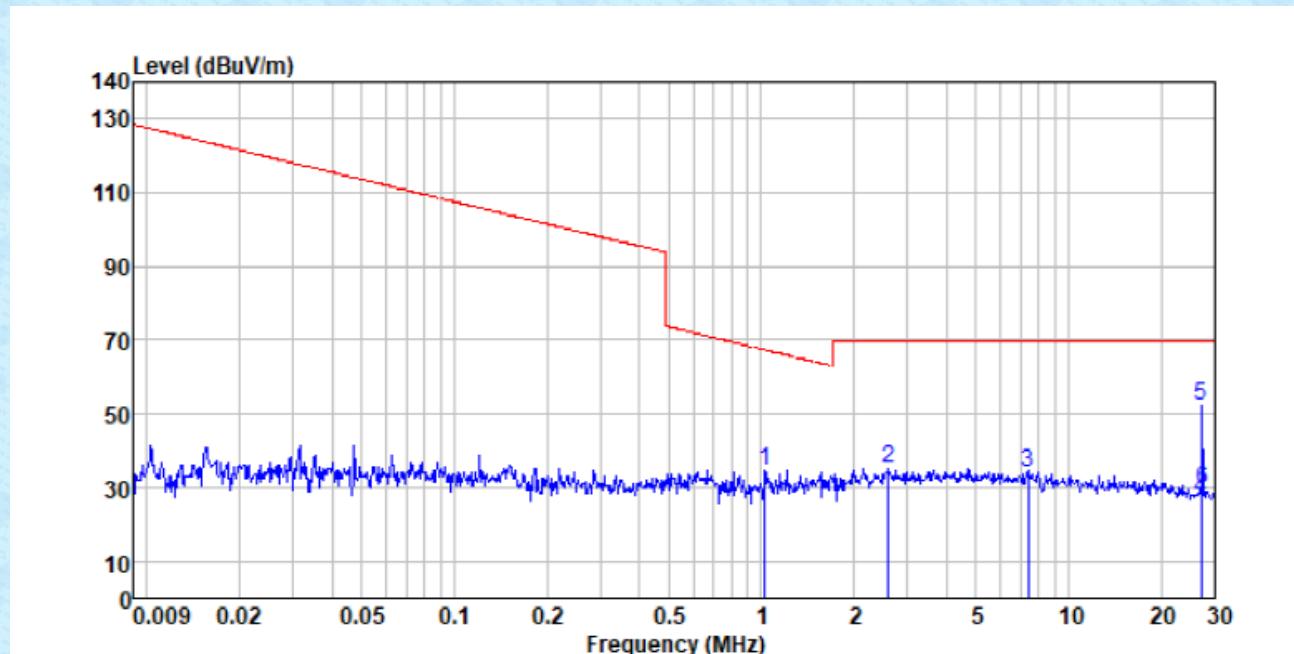


7.3 Field Strength of the Fundamental Signal and Radiated Emissions

Test Requirement:	47 CFR Part 15, Subpart C 15.227(a), 15.227(b) & 15.209																													
Test Method:	ANSI C63.10:2013																													
Test Frequency Range:	9kHz to 1000MHz																													
Test site:	Measurement Distance: 3m																													
Limit: (Field strength of the fundamental signal)	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dBuV/m @3m)</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>26.96-27.28MHz</td> <td>80</td> <td>Average Value</td> </tr> <tr> <td></td> <td>100</td> <td>Peak Value</td> </tr> </tbody> </table>			Frequency	Limit (dBuV/m @3m)	Remark	26.96-27.28MHz	80	Average Value		100	Peak Value																		
Frequency	Limit (dBuV/m @3m)	Remark																												
26.96-27.28MHz	80	Average Value																												
	100	Peak Value																												
Limit: (Radiated Emissions)	<table border="1"> <thead> <tr> <th>Frequency(MHz)</th> <th>Field strength (microvolts/meter)</th> <th>Measurement distance(meters)</th> </tr> </thead> <tbody> <tr> <td>0.009-0.490</td> <td>2400/F(kHz)</td> <td>300</td> </tr> <tr> <td>0.490-1.705</td> <td>24000/F(kHz)</td> <td>30</td> </tr> <tr> <td>1.705-30.0</td> <td>30</td> <td>30</td> </tr> </tbody> </table> <p>Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz and 110-490kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.</p> <table border="1"> <thead> <tr> <th>Frequency(MHz)</th> <th>Field strength (microvolts/meter)</th> <th>Measurement distance(meters)</th> </tr> </thead> <tbody> <tr> <td>30-88</td> <td>100</td> <td>3</td> </tr> <tr> <td>88-216</td> <td>150</td> <td>3</td> </tr> <tr> <td>216-960</td> <td>200</td> <td>3</td> </tr> <tr> <td>Above 960</td> <td>500</td> <td>3</td> </tr> </tbody> </table> <p>Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for above 1000MHz. Radiated emission limits above 1000MHz is based on measurements employing an average detector.</p>			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	Frequency(MHz)	Field strength (microvolts/meter)	Measurement distance(meters)	30-88	100	3	88-216	150	3	216-960	200	3	Above 960	500	3
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																												
Frequency(MHz)	Field strength (microvolts/meter)	Measurement distance(meters)																												
30-88	100	3																												
88-216	150	3																												
216-960	200	3																												
Above 960	500	3																												

Test setup:	<p>Below 30MHz</p>  <p>Below 1GHz</p> 
Test Procedure:	<p>Below 30MHz:</p> <ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the ground for below 1GHz at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is fixed at one meter The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which is worse case, only the test worst case mode is recorded in the report. <p>Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</p> <p>30Mhz-1000MHz:</p> <ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the

	<p>ground for below 1GHz at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</p> <p>g. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.</p> <p>Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test environment:	Temp.: 25 °C Humid.: 50% Press.: 1 010mbar
Test voltage:	DC 3V
Test results:	Pass

Measurement data:
9kHz~30MHz


No. Mk.	Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
1	1.027	13.85	20.51	0.33	0.00	34.69	67.37	-32.68	QP
2	2.589	13.78	20.85	0.39	0.00	35.02	69.54	-34.52	QP
3	7.373	12.73	20.68	0.46	0.00	33.87	69.54	-35.67	QP
4	26.960	5.79	20.59	0.55	0.00	26.93	69.54	-42.61	QP
5*	27.145	31.30	20.57	0.55	0.00	52.42	100.00	-47.58	PK
6	27.280	8.36	20.54	0.55	0.00	29.45	69.54	-40.09	QP

Remarks:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

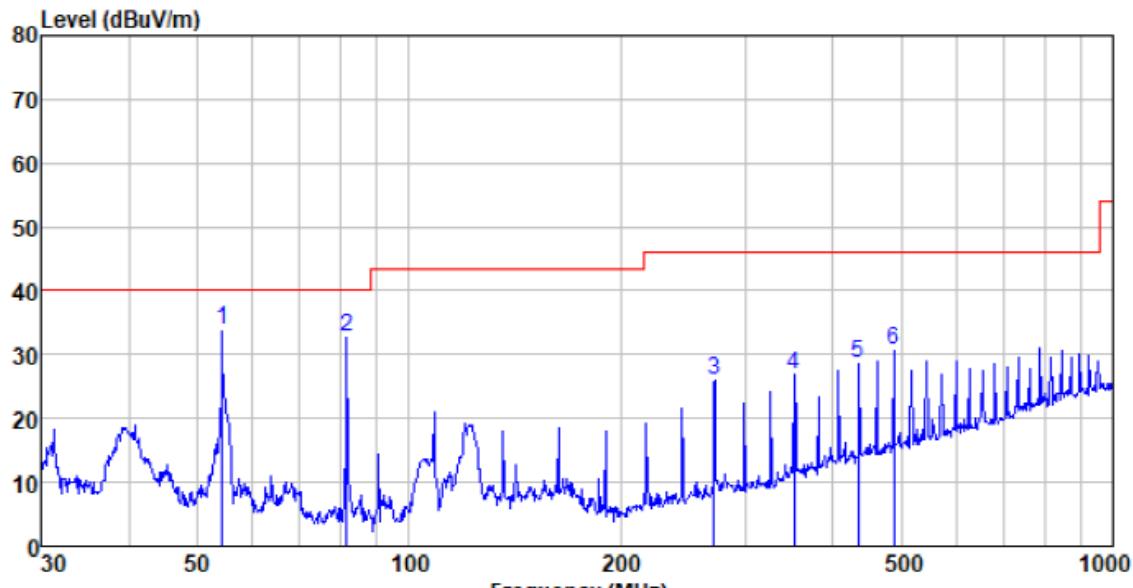
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

- 2) *: Field Strength of the Fundamental Signal.

The peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the above measurement data were shown in the report.

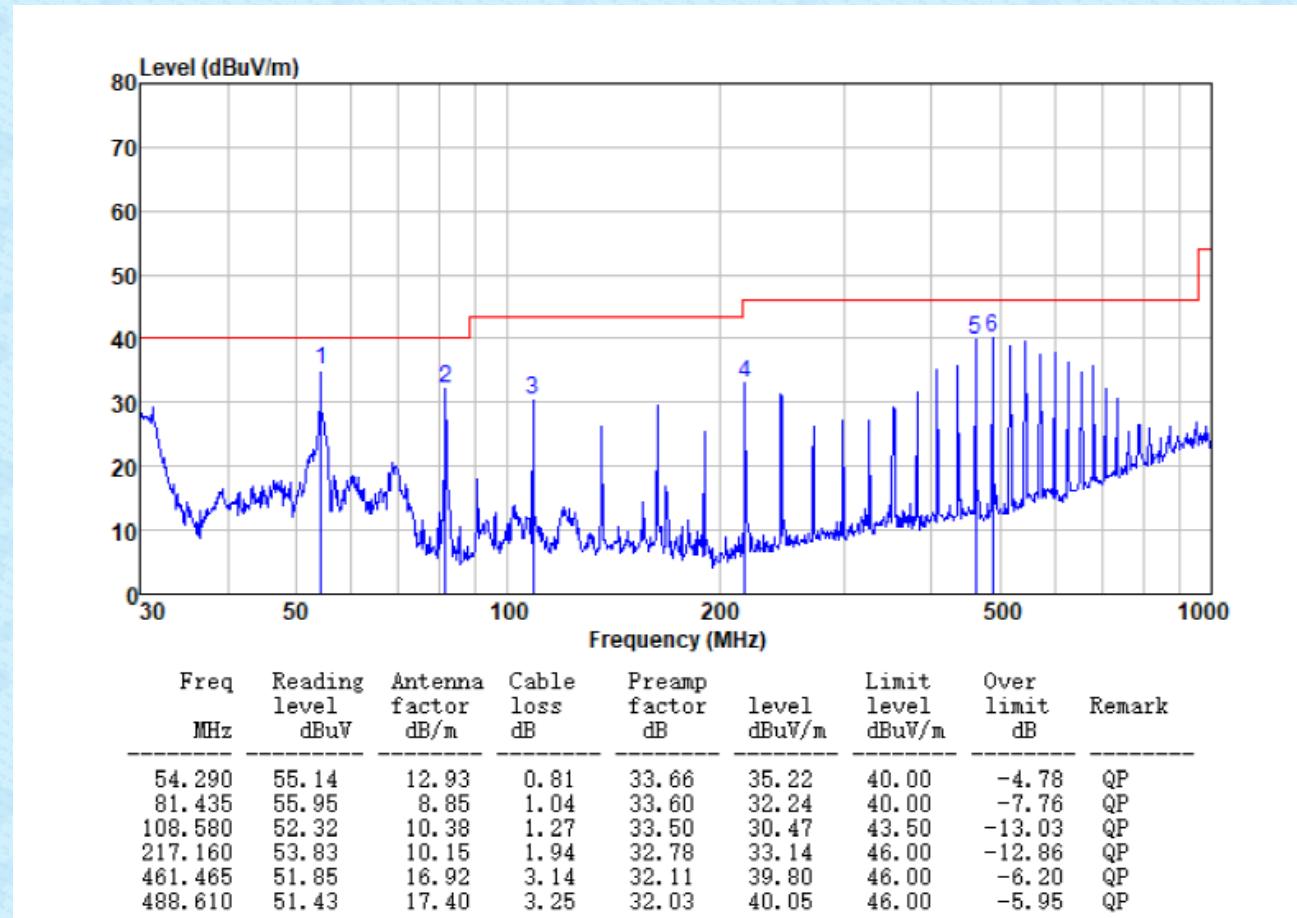
30MHz~1GHz

Mode:	Transmitting mode	Polarization:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	Limit level dBuV/m	Over limit dB	Remark
54.290	53.74	12.93	0.81	33.66	33.82	-6.18	QP
81.435	56.34	8.85	1.04	33.60	32.63	-7.37	QP
271.450	44.27	12.23	2.23	32.72	26.01	-19.99	QP
352.885	42.44	14.26	2.64	32.48	26.86	-19.14	QP
434.320	41.33	16.40	3.02	32.19	28.56	-17.44	QP
488.610	41.99	17.40	3.25	32.03	30.61	-15.39	QP

Mode:	Transmitting mode	Polarization:	Vertical
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Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

-----End-----