





No.: AJT220719030E

Applicant Name : KNP LLC

Applicant Address : 4800 NORTH FEDERAL HIGHWAY, SUITE A301 BOCA RATON, FL

33431 USA

Manufacturer Name : KNP LLC

Manufacturer Address : 4800 NORTH FEDERAL HIGHWAY, SUITE A301 BOCA RATON, FL

33431 USA

The following samples were submitted and identified by/on behalf of the client as:

Sample Description : RC CAR Model No. : 5001969 Sample Received Date : 19 July, 2022 **Testing Completed Date** : 21 July, 2022

Tests conducted: For compliance with application, refer to attached page(s) for details.

Test Requested:	Conclusion
FCC part 15, Subpart C, Section 15. 235 & ANSI C63,10-2013	PASS

Glory Reviewed by: Fly Living Approved by:

Position

Date.

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Add: 1-2/F., No.1, Wenhua South Road, Chenghua Industrial Zone, Chenghai District, Shantou, Guangdong, China Website: www.ajtesting.com Email: info@ajtesting.com Tel: 86-754-85860999 Fax: 86-754-86984098







No.: AJT220719030E

TABLE OF CONTENTS

1 Test Standards	
2 Summary	
2.1 General Remarks	
2.2 Final Assessment	3
3 Equipment Under Test	
3.1 Short Description of the Equipment Under Test (EUT)	
3.2 EUT Configuration	
4 Test Environment	
4.1 Address of the Test Laboratory	
4.2 Test Facility	
4.3 Environmental Conditions	5
4.4 Statement of the Measurement Uncertainty	
4.5 Test Types and Results	
5 Test Conditions and Results	
5.1 Radiated Emission (RE)	
5.1.1 Test Procedures	
5.1.3 Test Limits	
5.1.3 Test Limits	
5.1.4.1 Field Strength of Fundamental	
5.1.4.2 Calculation of Average Factor	1
5.2 20dB Bandwidth	
5.2.1 Test Procedures	
5.2.2 Test Setup	
5.2.3 Test Limits	
5.2.4 Test Results	
5.3 Conducted Emission (CE)	
5.3.1 Test Procedures	
5.3.2 Test Setup	
5.3.3 Test Limits	
5.3.4 Test Results	
5.4 Antenna Requirements	
5.4.1 Test Standard:	
5.4.2 Standard Requirement:	
5.4.3 EUT Antenna:	
6 Test Equipment	
7 Test Photographs	
8 Photos of the EUT	
9 Manufacturer/ Approval Holder Declaration	21

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No.: AJT220719030E

1 Test Standards

The tests were performed according to following standards:

FCC part 15, Subpart C, Section 15. 235: Operation within the band 49.82-49.90 MHz

ANSI C63,10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

2 Summary

2.1 General Remarks

Date of receipt of test sample	19 July, 2022
Testing commenced on	19 July, 2022 21 July, 2022
Testing concluded on	21 July, 2022

2.2 Final Assessment

Test Content:	Assessment
The RF requirements pertaining to the technical standards and tested operation modes are	Fulfilled
The equipment under test	Fulfilled the RF requirements

3 Equipment Under Test

3.1 Short Description of the Equipment Under Test (EUT)

EUT Name	RC CAR		
Model No.	5001969		
FCC ID	2A28T-49KNP5001969		
Number of Tested Samples	1		
Power Supply Voltage	DC 3.0V(AA*2)		
Operating Mode	TX mode		
Operation Frequency	49.86MHz		
Number of Channel	1		
Modulation	FSK		
Antenna Type	Wire Antenna		
Antenna Gain	0dBi		

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. The laboratory is not responsible for the accuracy of the information provided by manufacturer.

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3.2 EUT Configuration

(The CDF filled by the applicant can be viewed at the test laboratory.) The following peripheral devices and interface cables were connected during the measurement: Not Applicable

3.3 Description of Test Modes

NO.	Frequency	Test Mode Description
1	49.86MHz	TX mode
Note:	4)	

1 NOIG.

- 1. All the test modes can be supply by new battery, and only the data of the worst case recorded in the test report.
- 2. For radiated emission, 3axis were chosen for testing for each applicable mode.









4 Test Environment

4.1 Address of the Test Laboratory

Test Laboratory:	AJT Testing Services Limited
Test Site:	1-2/F., NO.1, WENHUA SOUTH ROAD, CHENGHUA INDUSTRIAL ZONE, CHENGHAI DISTRICT, SHANTOU, GUANGDONG, CHINA
Tel:	86-754-85860999
Fax:	86-754-86984098

4.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:		
CNAS Accreditation NO.:	L4735	
A2LA Accreditation NO.:	5443.01	
Designation Number:	CN1263	
Test Firm Registration Number:	127385	
Industry Canada Site Registration Number:	25345	
FCC Registration NO.:	0028094555	

4.3 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:		
Temperature	15~35℃	
Humidity	30~75% RH	

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4.4 Statement of the 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. Furthermore, component and process variability of devices are similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Measurement Unce	rtainty
Conducted Emission (CE)	±2.14dB
Radiated Emission below 1GHz	±4.44dB
Radiated Emission above 1GHz	±5.26dB

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

4.5 Test Types and Results

Standard: FCC part 15, Subpart C			
Standard Section	Test Type	Result	Remark
§15.207	Conducted Emission (CE)	N/A	EUT is powered by battery
§15.235(a) & §15.235(b)&15.209	Radiated Emission (RE) and Band Edges	Pass	Compliant
§15.215	20dB Bandwidth	Pass	Compliant
§15.203	Antenna Requirement	Pass	No antenna connector is used

Note: The conducted limits are not required for devices which only employ battery power for operation.

5 Test Conditions and Results

5.1 Radiated Emission (RE)

For test instruments and accessories used see section 6

5.1.1 Test Procedures

The basic test procedure was in accordance with ANSI C63.10 (section 6).

- (1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. (Below 1000MHz)
- (2) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. (Below 30MHz)

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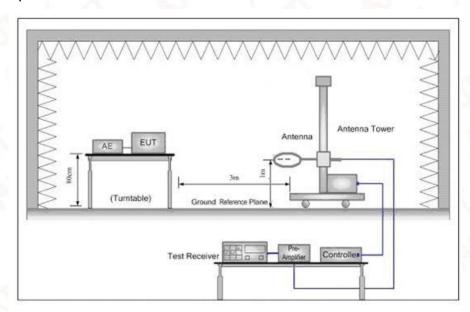
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- (3) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- (4) The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- (5) 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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- (6) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.
- (7) During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X,Y & Z) and considered typical configuration to obtain worst position Y, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level.
- (8) For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

Note

- 1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
- 2. Emission level $(dB\mu V/m) = Raw value (dB\mu V) + Correction Factor (dB/m)$
- 3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- 4. Margin value = Emission level Limit value.
- Fundamental AV value = PK Emission + AV Factor

5.1.2 Test Setup



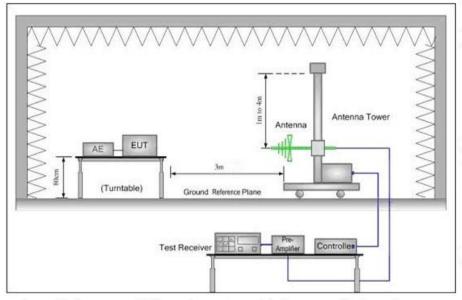
Below 30MHz







No.: AJT220719030E



30MHz-1GHz

5.1.3 Test Limits

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (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
Above 960	500	3

According to §15. 235(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Range of	Field Strength of Fundamental	Field Strength of Fundamental
Fundamental (MHz)	Emission (Peak) (µV/m)	Emission (average) (µV/m)
49.82 ~ 49.90	100,000(100dBµV/m)	10,000(80dBµV/m)

Note:

- 1. The lower limit shall apply at the transition frequencies.
- 2. Emission level (dB μ V/m) = 20 log Emission level (μ V/m).

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No.: AJT220719030E

3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

FCC 15.235(b)

The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits in §15.209, whichever permits the higher emission levels. The field strength of any emissions removed by more than 10 kHz from the band edges shall not exceed the general radiated emission limits in §15.209. All signals exceeding 20 microvolts/meter at 3 meters shall be reported in the application for certification.



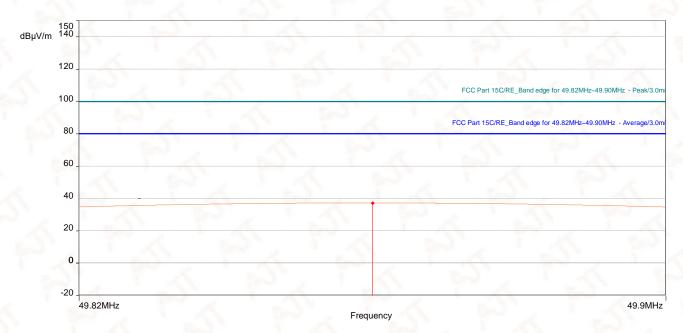




No.: AJT220719030E

5.1.4 Test Results

5.1.4.1 Field Strength of Fundamental



Horizontal



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Frequency (MHz)	Reading Level (dBµV/m)	Emission Level (dBµV/m)	Limit. (dBµV/m)	Margin (dB)	Correction Factor(dB)	Polarization
49.86(PK)	/	37.18	100.00	-62.82	-5.24	Horizontal
49.86(PK)	1	53.91	100.00	-46.09	-5.24	Vertical
49.86(AV)	1	32.82	80.00	-47.18	-4.36	Horizontal
49.86(AV)	1	49.55	80.00	-30.45	-4.36	Vertical

Note:

- 1.Emission Level = Read Level + Correction Factor
- 2.Correction Factor = Antenna Factor + Cable Loss Preamplifier Gain
- 3.Margin = Emission Level -Limit Value
- 4. The average value of fundamental frequency is: Average value = Peak value +AV factor, where the AV factor is calculated from following formula: AV factor=20 log (Duty cycle) = $20 \log (60.55\%) = -4.36 dB$, please see 5.1.4.2.

5.1.4.2 Calculation of Average Factor

The duration of one cycle = 19.46ms

Effective period of the cycle =1.606ms*4 + 0.536ms*10 =11.784ms

Duty Cycle =11.784ms / 19.46ms =60.55%

Averaging factor in dB = $20 \log (duty \text{ cycle}) = 20 \log (60.55\%) = -4.36 dB$

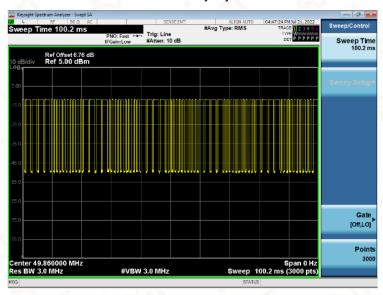




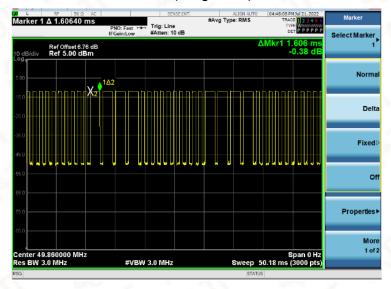


No.: AJT220719030E

100ms Duty Cycle



Ton1 (Long Pulse)



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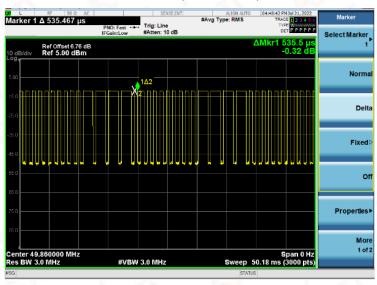




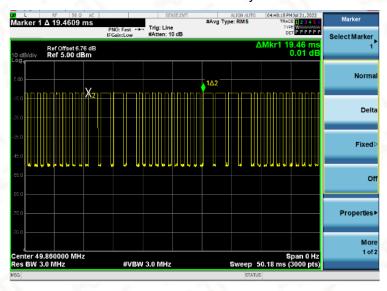


No.: AJT220719030E

Ton2 (Short Pulse)



The duration of one cycle









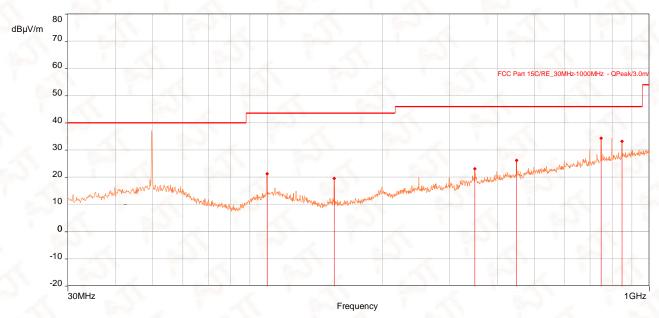
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5.1.4.3 9kHz-1GHz Radiated Emission Result

The disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Test Point	Operation Mode	Result
Horizontal	TX mode	Pass

EUT Name	RC CAR
Operating Condition	DC 3.0V(AA*2)
Test Condition	Ambient Temperature: 26°C Humidity: 66% RH



Frequency (MHz)	Peak (dBµV/m)	QP (dBµV/m)	QP Lim. (dBµV/m)	Margin (dB)	Angle (°)	Height (m)	Polarization
99.743	21.29	1	43.50	-22.21	104.00	1.99	Horizontal
149.504	19.54	1	43.50	-23.96	252.00	1.99	Horizontal
349.033	23.12	1	46.00	-22.88	78.00	1.00	Horizontal
448.749	26.17	1	46.00	-19.83	248.00	1.99	Horizontal
747.897	34.36	1	46.00	-11.64	146.00	1.00	Horizontal
847.613	33.28	1	46.00	-12.72	317.00	1.00	Horizontal

- 1.QP is abbreviation of Quasi-Peak
- 2.Margin = Emission Level -Limit Value
- 3. The emission levels of other frequencies were more than 20dB margin against the limit

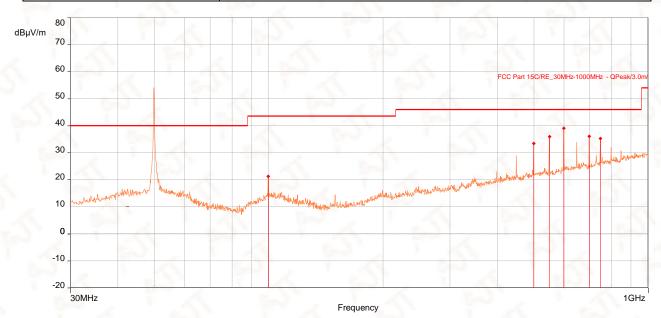






Test Point	Operation Mode	Result
Vertical	TX mode	Pass

EUT Name	RC CAR
Operating Condition	DC 3.0V(AA*2)
Test Condition	Ambient Temperature: 26°C Humidity: 66% RH



Frequency (MHz)	Peak (dBV/m)	QP (dBµV/m)	QP Lim. (dBµV/m)	Margin (dB)	Angle (°)	Height (m)	Polarization
99.646	21.27	1	43.50	-22.23	313.00	1.02	Vertical
498.607	33.41	/	46.00	-12.59	139.00	1.02	Vertical
548.465	35.99	1	46.00	-10.01	312.00	1.02	Vertical
598.323	39.11	1	46.00	-6.89	306.00	1.02	Vertical
698.039	36.14	1	46.00	-9.86	358.00	1.02	Vertical
747.897	35.33	1	46.00	-10.67	26.00	2.00	Vertical

- 1.QP is abbreviation of Quasi-Peak
- 2.Margin = Emission Level -Limit Value
- 3. The emission levels of other frequencies were more than 20dB margin against the limit









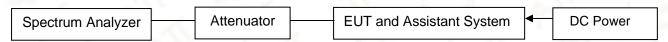
5.2 20dB Bandwidth

For test instruments and accessories used see section 6

5.2.1 Test Procedures

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- 3. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- 4. Repeat above procedures until all frequencies measured were complete.

5.2.2 Test Setup



5.2.3 Test Limits

The field strength of any emissions appearing between the band edges and out of band shall be attenuated at least 20 dB below the level of the unmodulated carrier or to the general limits in Section 15.209

Frequency (MHz)	Limits (MHz)
49.86	Within 49.82-49.90









5.2.4 Test Results



F _L (MHz)	F _H (MHz)	Limit (MHz)	Result
49.835	49.887	49.82 MHz -49.90 MHz	PASS

5.3 Conducted Emission (CE)

For test instruments and accessories used see section 6

5.3.1 Test Procedures

The PC Power connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). This provides a 50 ohm coupling impedance for the EUT. Please refer the block diagram of the test setup and photographs. The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#1). Power on the PC and let it work normally, we use a keyboard test software, let EUT working in test mode, then test it. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC Part 15C on Conducted Emission Test.

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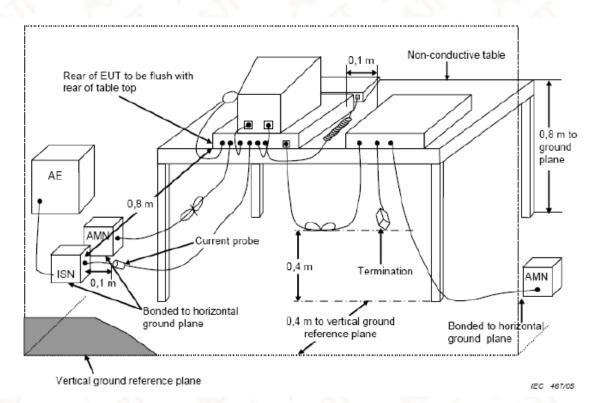








5.3.2 Test Setup



5.3.3 Test Limits

	Standard: FCC part 15, Subpart	t C
Fraguency of aminaian (MIII)	Maximum RF	Line Voltage
Frequency of emission (MHz)	Quasi-Peak Level dB(μV)	Average Level dB(μV)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

5.3.4 Test Results

Not Applicable

Note: The device is a DC power supply and does not apply to conducted emissions.

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No.: AJT220719030E

5.4 Antenna Requirements

5.4.1 Test Standard:

FCC Part 15, Subpart C 15.203

5.4.2 Standard 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.

5.4.3 EUT Antenna:

The antenna is Wire Antenna and no consideration of replacement. The best case gain of the antenna is 0dBi.Antenna location: Refer to Internal Photos of RC CAR.









6 Test Equipment

Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	ROHDE & SCHWARZ	ESR3	102452	2022/03/22	2023/03/22
Spectrum Analyzer	Keysight	N9010A	MY51120099	2021/11/30	2022/11/30
Trilog Broadband Antenna	SCHWARZBECK	VULB 9163	9163-1127	2021/07/12	2023/07/12
Horn Antenna	SCHWARZBECK	BBHA 9120D	01829	2022/03/22	2023/03/22
Broadband Preamplifier	SCHWARZBECK	BBV 9743B	00067	2022/03/22	2023/03/22
Broadband Preamplifier	SCHWARZBECK	BBV 9718B	00002	2022/03/22	2023/03/22
Line Impedance Stabilization Network / V LINE	SCHWARZBECK	NSLK 8127 RC	8127-RC 05040	2022/03/22	2023/03/22
Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F N00359	2022/03/22	2023/03/22
DC Power Supply	SIGLENT	SPD1168X	SPD1XEAD3 R 0167	2022/03/22	2023/03/22
Active Loop Antenna	HRTY	HR8913A	69331322060 23	2022/07/15	2023/07/15
Double Ridge Guide Horn Antennas	A.H.Systems	SAS-574	588	2021/06/28	2023/06/28
BAT-EMC Testing (Test Software)	NEXIO	BAT-EMC	Version: 3.16.0.74	/	/
Conduction Control Room	Shenzhen EMC- united	SR6	/	2021/09/14	2024/09/14









7 Test Photographs

Referring to - "Test Setup Photos of RC CAR".

8 Photos of the EUT

Referring to - "External Photos of RC CAR" and "Internal Photos of RC CAR".

9 Manufacturer/ Approval Holder Declaration

The following identical model(s):

1

Belong to the tested device:

Product Description: RC CAR Model No.: 5001969

END OF TEST REPORT

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