ACCREDITED
TESTING LABORATORY
CERTIFICATE # 4821.01

BACL
Bay Area Compliance Labs Corp.

FCC PART 15B, CLASS B

TEST REPORT

For

JM Manufacturing Limited

Justen Centre, 1-3/F, 46-52 Wai Ching Street, Jordan Road, Kowloon, Hong Kong

FCC ID: 2AHGJJMSYZA12-27

Report Type:	**Product Type:**
Original Report	RC Formula Car

Report Number: RSZ180712830-00

Report Date: 2018-07-26

Seal Deng

Reviewed By: EMC Engineer

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Note: This report must not be used by the customer to claim product certification, approval, or endorsement by A2LA* or any agency of the Federal Government. * This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "*"

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *JM Manufacturing Limited'* s product, model number: *JMS-YZ588-11A12 (FCC ID: 2AHGJJMSYZA12-27, UPC number: 192234003329)* or the "EUT" in this report is a *RC Formula Car,* which was measured approximately: 19.5 cm (L) *8.5 cm (W) * 5.8 cm (H), rated with input voltage: DC 4.5V from battery. The highest operating frequency is 27MHz.

** All measurement and test data in this report was gathered from production sample serial number: 180712830 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2018-07-12.*

Objective

This test report is prepared on behalf of *JM Manufacturing Limited* in accordance with Part 2-Subpart J, Part 15-Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of the EUT with FCC Part 15 B.

Related Submittal(s)/Grant(s)

FCC PART 15.227 DXX submissions with FCC ID: 2AHGJJMSYZA12-27-1.

Test Methodology

All measurements contained in this report were conducted with 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 40 GHz.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will be taken into consideration for the test data recorded in the report

Item			Expanded Measurement uncertainty
Radiated emission	30MHz~200MHz	Horizontal	4.58 dB (k=2, 95% level of confidence)
		Vertical	4.59 dB (k=2, 95% level of confidence)
	200MHz~1 GHz	Horizontal	4.83 dB (k=2, 95% level of confidence)
		Vertical	5.85 dB (k=2, 95% level of confidence)

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a manufacturer testing fashion.

EUT Exercise Software

No exercise software was used.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

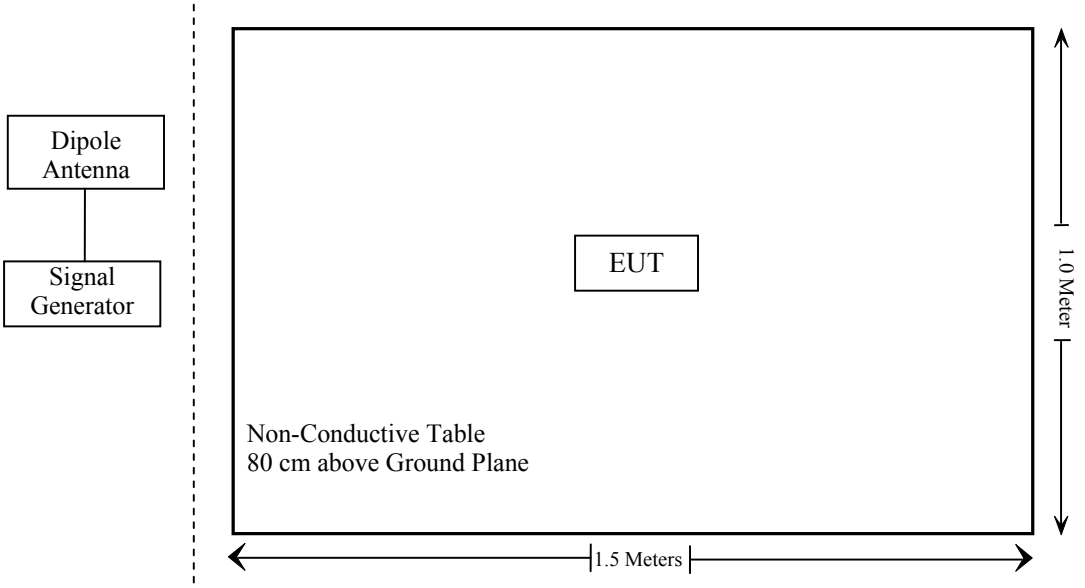
Manufacturer	Description	Model	Serial Number
Agilent	Signal Generator	8665B	3744A01692

External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded detachable RF Cable	1.0	Signal Generator	Dipole Antenna

Block Diagram of Test Setup

Super-regenerative receiver



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Not Applicable
§15.109	Radiated Emissions	Compliance

Note: The EUT is powered by the batteries.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
HP	Amplifier	HP8447E	1937A01046	2018-05-21	2018-11-19
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2018-01-11	2019-01-11
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
Rohde & Schwarz	Auto test Software	EMC32	V9.10	NCR	NCR
TDK	Chamber	Chamber A	2#	2016-12-05	2019-12-05
COM-POWER	Dipole Antenna	AD-100	721027	NCR	NCR
R&S	Auto test Software	EMC32	V9.10	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

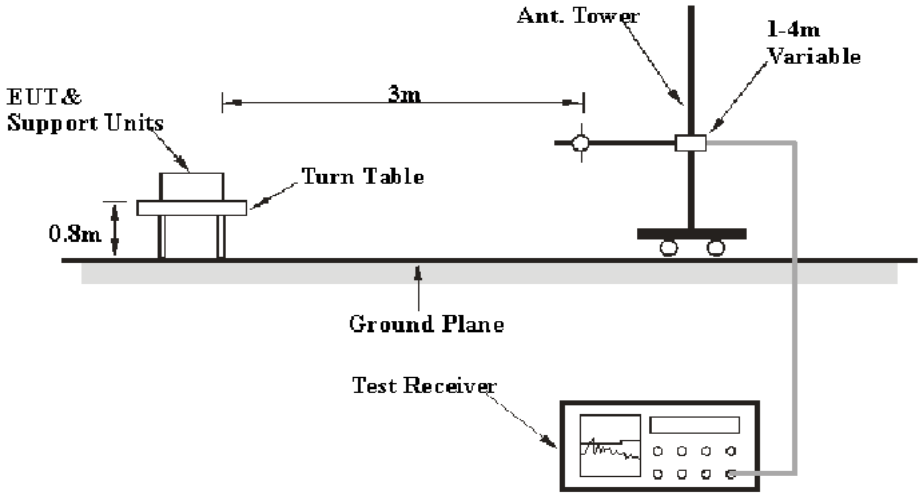
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

FCC §15.109

EUT Setup

Below 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz.

Corrected Amplitude & Margin Calculation

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

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

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

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109 Class B,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

Temperature:	26 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Joson Xiao on 2018-07-16.

EUT Operation Mode: Receiving（Receiving the unmodulated CW signal from signal generator）

30 MHz~1 GHz

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
423.675250	18.75	229.0	H	0.0	-7.0	46.00	27.25
436.908000	20.89	232.0	H	335.0	-6.5	46.00	25.11
439.153500	25.41	105.0	H	338.0	-6.4	46.00	20.59
440.213625	19.18	204.0	H	343.0	-6.4	46.00	26.82
486.069375	31.99	182.0	H	350.0	-5.3	46.00	14.01
496.446625	32.01	172.0	H	169.0	-4.9	46.00	13.99

Note:

1) Corrected Amplitude = Meter Reading + Correction Factor
2) Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain
3) Margin = Limit – Corrected Amplitude

******* END OF REPORT *******