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Report No.: SZEM170500507501  
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# TEST REPORT

**Application No.:** SZEM1705005075CR  
**Applicant:** ZHEN CHENG TOYS FACTORY  
**Address of Applicant:** CHENGHAI DISTRICT, SHANTOU CITY, GUANGDONG PROVINCE, CHINA  
**Equipment Under Test (EUT):**  
**EUT Name:** R/C CAR  
**Model No.:** Please refer to section 2 ♣  
 ♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.  
**Standards:** ETSI EN 301 489-1 V2.1.1  
 Final draft ETSI EN 301 489-3 V2.1.1  
 (only for Radiated Disturbance and Radiated Immunity )  
**Date of Receipt:** 2017-05-25  
**Date of Test:** 2017-06-02 to 2017-06-15  
**Date of Issue:** 2017-06-20

<b>Test Result :</b>	Pass*
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\* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.



Jack Zhang  
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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<b>Revision Record</b>				
<b>Version</b>	<b>Chapter</b>	<b>Date</b>	<b>Modifier</b>	<b>Remark</b>
01		2017-06-20		Original

<b>Authorized for issue by:</b>				
				
		<hr/>		
		<b>Peter Geng /Project Engineer</b>		
				
		<hr/>		
		<b>Eric Fu /Reviewer</b>		

## 2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Radiated Disturbance (30MHz-1GHz)	ETSI EN 301 489-1 V2.1.1	EN 55032:2015	Class B	Pass

Immunity Part				
Item	Standard	Method	Requirement	Result
Radiated Immunity (80MHz-6GHz)	ETSI EN 301 489-1 V2.1.1	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass

**Remark:**

Model No.: 333-BBD01, 333-BBD02, 333-BBD03, 333-BB01, 333-BB02, 333-BB03, 333-NB01, 333-NB02, 333-NB03, 333-NBS01, 333-NBS02, 333-NBS03, 333-P001, 333-P002, 333-P003, 333-P004, 333-P004, 333-P005, 333-P006, 333-P007, 333-P008, 333-P009, 333-933B, 333-933A, 333-XZ001B, 333-XZ007B, 333-WL007, 333-WL008, 333-WL009, 333-ZL01B, 333-ZL02B, 333-ZL03B, 333-4T11, 333-4T12, 333-4T11A, 333-4T12A, 333-4T21A, 333-4T22A, 333-4T23A, 333-4T21, 333-4T22, 333-4T23, 333-P011, 333-P012, 333-P013, 333-P014, 333-P015, 333-P011A, 333-P012A, 333-P013A, 333-P014A, 333-P015A, 333-P021, 333-P022, 333-P023, 333-P024, 333-P021A, 333-P022A, 333-P023A, 333-P024A, 333-PS021, 333-PS022, 333-PS023, 333-PS024, 333-PS021A, 333-PS022A, 333-PS023A, 333-PS024A, 333-VS01, 333-VS02, 333-VS03, 333-VS04, 333-TK01, 333-TK11, 333-ZJ01, 333-ZJ11, 17XZ01B, 17XZ01A

Only the model 333-BBD01 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on colour, package and decorations.

This test report (Ref. No.: SZEM170500507501) is only valid with the original test report (Ref. No.: SZEM160900745401).

Compared with the original report, this report changed the model No. and updated the below standards.

Original report standard	The newest report standard
EN 301 489-1 V1.9.2	ETSI EN 301 489-1 V2.1.1
EN 301 489-3 V1.6.1	Final draft ETSI EN 301 489-3 V2.1.1

Considering to the difference, pre-scan were performed on the sample in this report to find the items which can be influential to the result in the original test report for fully retest.

Therefore in this report Radiated Disturbance Radiated Immunity were retested on Model 333-BBD01 and shown the data in this report, other tests please refer to original report SZEM160900745401.



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## 4 General Information

### 4.1 Details of E.U.T.

Power supply:	Remote: DC 9V by (6F22) battery; Car: DC 7.2V 700mAh rechargeable battery which charged by adapter. adapter information: MODEL: LJ-06A0720250Z INPUT: AC 100-240V, 50/60Hz OUTPUT: DC 7.2V, 0.25A
Test voltage	AC 230V/50Hz
Cable:	DC line: 150cm, unshielded

### 4.2 Description of Support Units

The EUT has been tested as an independent unit.



### 4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radiated emission	4.5dB (30MHz-1GHz )
		4.8dB (1GHz-6GHz )
2	Radiated Immunity	1.64dB
3	Temperature test	1 °C
4	Humidity test	3%



#### **4.4 Test Location**

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

#### **4.5 Test Facility**

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

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical 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 our files. Registration No.: 556682.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

#### **4.6 Deviation from Standards**

None

#### **4.7 Abnormalities from Standard Conditions**

None

#### **4.8 Monitoring of EUT for All Immunity Test**

Visual: monitor the working status of the EUT

Audio: none

## 5 Equipment List

<b>Radiated Disturbance (30MHz-1GHz)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-05-10	2018-05-10
EMI Test Receiver	Agilent Technologies	N9038A	SEM004-05	2016-10-09	2017-10-09
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2014-11-01	2017-11-01
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2017-04-14	2018-04-13

<b>Radiated Immunity (80MHz-6GHz)</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
Fully-Anechoic Chamber 2	Chang Zhou Zhong Shuo	854	SEM001-05	2014-06-10	2017-06-10
Signal Generator	Rohde & Schwarz	SMB100A	SEM006-11	2017-04-14	2018-04-13
Broadband Amplifier (80MHz-1GHz)	Rohde & Schwarz	BBA150-BC250	SEM005-12	2016-10-09	2017-10-09
Broadband Amplifier (800MHz-6GHz)	Rohde & Schwarz	BBA150-D30E30	SEM005-13	2017-01-20	2018-01-20
Power Sensor	Rohde & Schwarz	NRP-Z91	SEM009-09	2017-04-14	2018-04-13
Power Sensor	Rohde & Schwarz	NRP-Z91	SEM009-08	2017-04-14	2018-04-13
Log-periodic Antenna (0.07-3GHz)	Schwarzbeck	VUSLP9111 E	SEM003-19	N/A	N/A
Stacked Double Log-periodic Antenna (0.7-10.5GHz)	Schwarzbeck	STLP 9149	SEM003-24	N/A	N/A
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	SEM010-01	2016-10-09	2017-10-09
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2017-04-14	2018-04-13
Audio Analyzer	Rohde & Schwarz	UPV	SEM008-03	2016-10-09	2017-10-09



<b>General used equipment</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Inventory No</b>	<b>Cal Date</b>	<b>Cal Due Date</b>
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2016-10-12	2017-10-12
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2017-04-18	2018-04-18

## 6 Emission Test Results

### 6.1 Radiated Disturbance (30MHz-1GHz)

Test Requirement:	ETSI EN 301 489-1 V2.1.1
Test Method:	EN 55032:2015
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz-230MHz	40 dB( $\mu$ V/m) quasi-peak
230MHz-1GHz	47 dB( $\mu$ V/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

#### 6.1.1 E.U.T. Operation

Operating Environment:

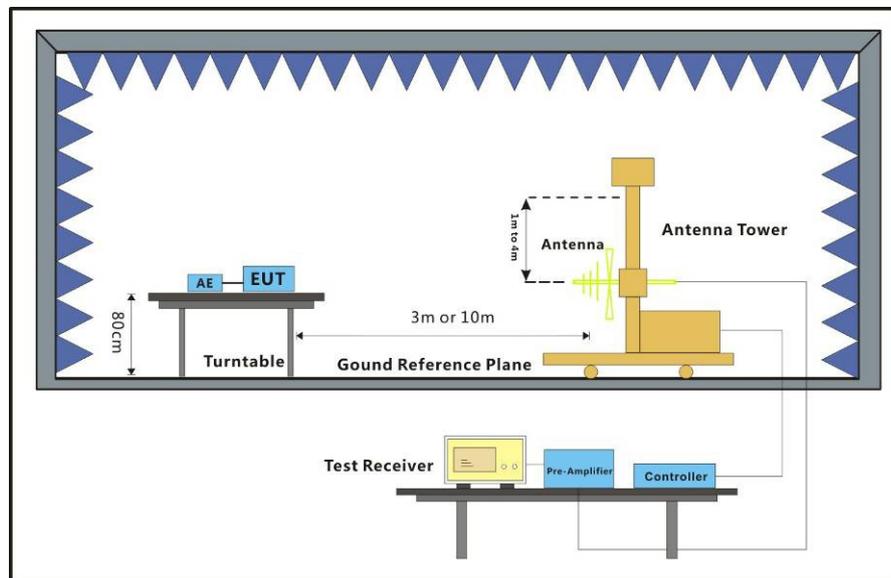
Temperature: 24 °C      Humidity: 54 % RH      Atmospheric Pressure: 1010 mbar

Pretest these mode to find the worst case:

- b:Idle\_Keep the EUT standby.
- c:Charging\_Keep the battery of the EUT in charging mode
- d:Operation(wireless)\_Keep the EUT pairing with other devices

The worst case for final test: d:Operation(wireless)\_Keep the EUT pairing with other devices

#### 6.1.2 Test Setup Diagram

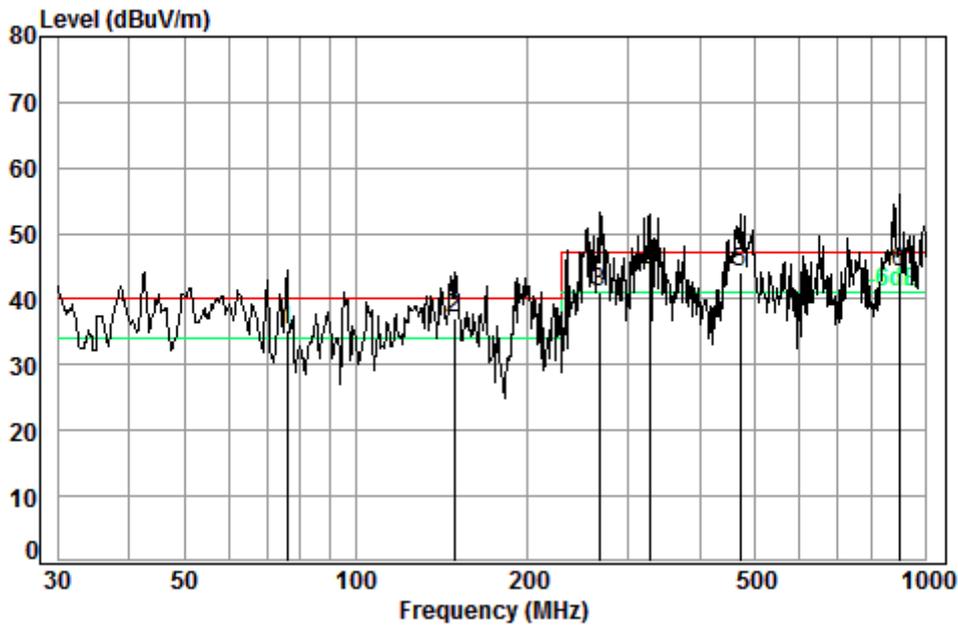


#### 6.1.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.



Mode:d; Polarization:Horizontal



Condition: 3m HORIZONTAL

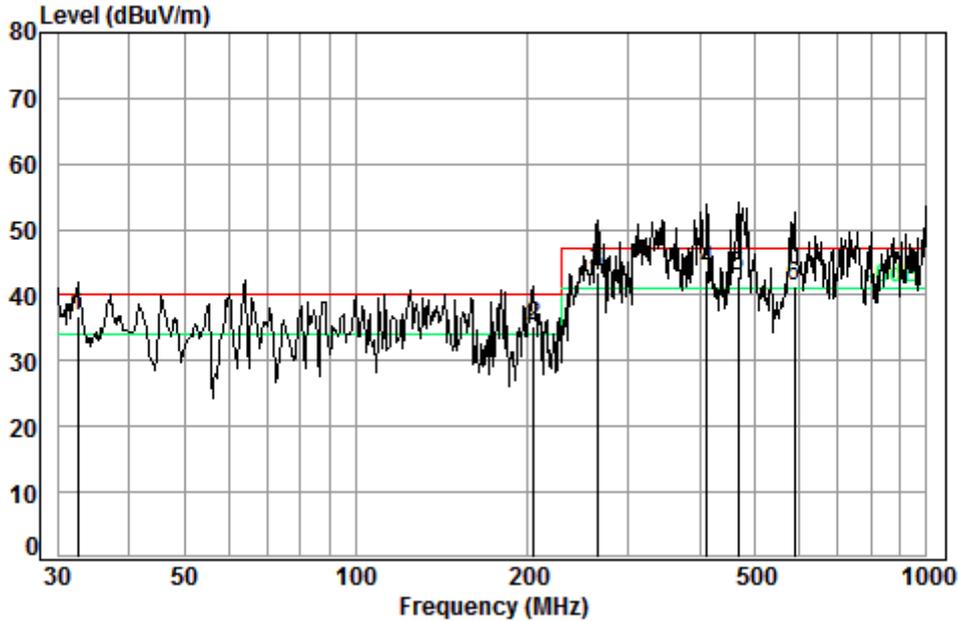
Job No. : 05075CR

: d

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	75.71	0.97	7.36	27.24	54.30	35.39	40.00	-4.61
2	pp 148.44	1.31	8.86	26.91	53.74	37.00	40.00	-3.00
3	266.61	1.75	12.63	26.49	53.31	41.20	47.00	-5.80
4	326.74	1.99	14.74	26.60	53.80	43.93	47.00	-3.07
5	470.52	2.49	17.64	27.56	51.40	43.97	47.00	-3.03
6	897.00	3.59	23.18	26.78	43.97	43.96	47.00	-3.04



Mode:d; Polarization:Vertical



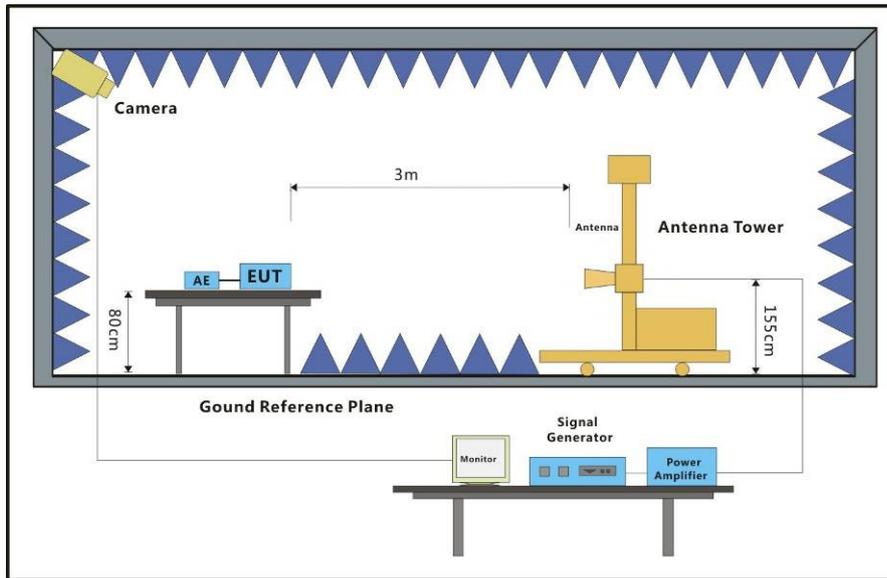
Condition: 3m VERTICAL  
Job No. : 05075CR  
: d

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	pp	32.63	0.60	17.22	27.35	46.46	36.93	40.00	-3.07
2		204.96	1.43	10.46	26.68	50.11	35.32	40.00	-4.68
3		264.75	1.74	12.59	26.49	55.51	43.35	47.00	-3.65
4		411.82	2.25	16.35	27.21	52.42	43.81	47.00	-3.19
5		467.24	2.48	17.52	27.54	50.57	43.03	47.00	-3.97
6		586.84	2.69	19.43	27.56	46.94	41.50	47.00	-5.50

## 6.2 Radiated Immunity (80MHz-6GHz)

Test Requirement: ETSI EN 301 489-1 V2.1.1  
Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010  
Performance Criterion: A  
Frequency Range: 80MHz to 6GHz  
Antenna Polarisation: Vertical and Horizontal  
Modulation: 1kHz,80% Amp. Mod,1% increment

### 6.2.1 Test Setup Diagram



### 6.2.2 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 54 % RH Atmospheric Pressure: 1010 mbar

Test mode: b:Idle\_Keep the EUT standby.

c:Charging\_Keep the battery of the EUT in charging mode

d:Operation(wireless)\_Keep the EUT pairing with other devices

### 6.2.3 Test Results:

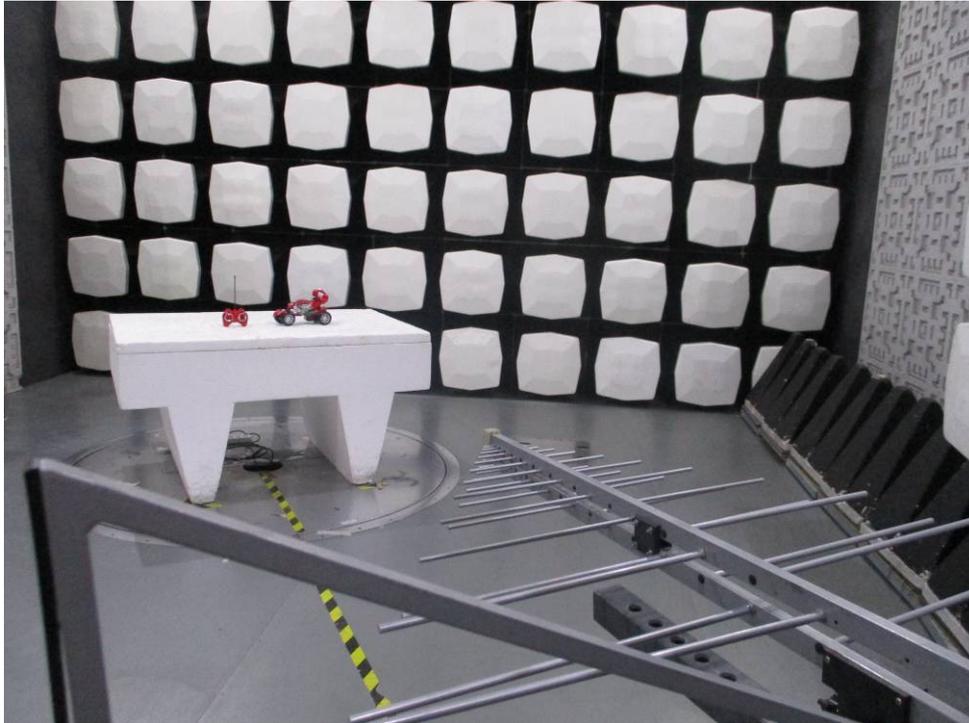
Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-6GHz	3	Front	2s	A
80MHz-6GHz	3	Back	2s	A
80MHz-6GHz	3	Left	2s	A
80MHz-6GHz	3	Right	2s	A
80MHz-6GHz	3	Top	2s	A
80MHz-6GHz	3	Underside	2s	A

### Results:

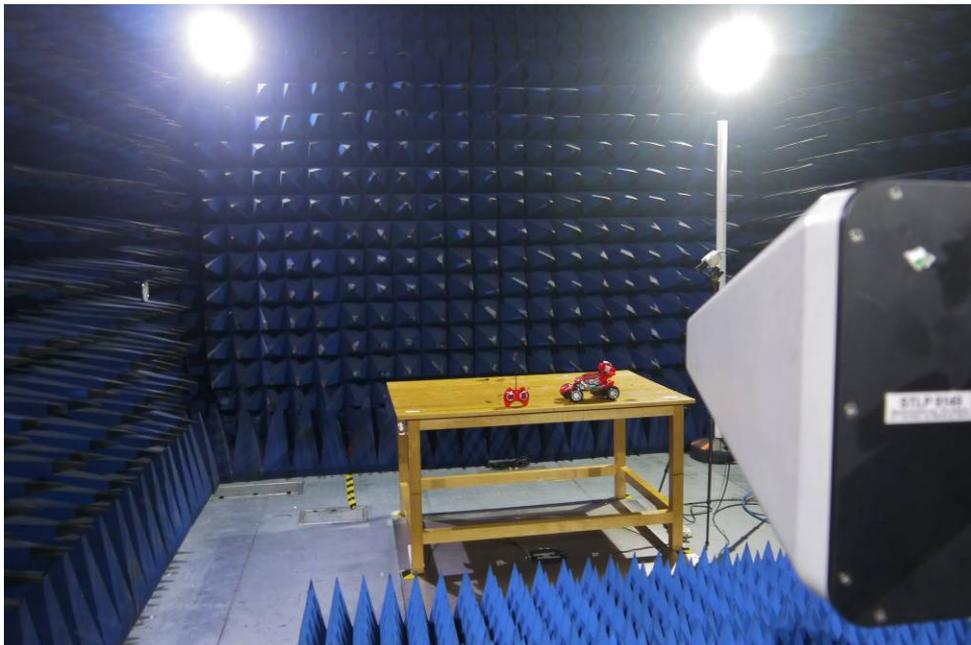
A: No degradation in the performance of the EUT was observed.

## 7 Photographs

### 7.1 Radiated Disturbance (30MHz-1GHz) Test Setup



## 7.2 Radiated Immunity (80MHz-6GHz) Test Setup





### **7.3 EUT Constructional Details**

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1705005075CR.