



RADIO COMMUNICATIONS AND EMC TESTING

MAY CHEONG TOY PRODUCTS FTY., LTD

R/C ROCK CRAWLER 6X6

Additional Names: RC Rock Crawler XXXL, R/C Rock Crawler El Demoleador, Rockzilla with new truck body & larger tires, XS Runner, 1:14 RC Formula Hobby Grade version, RC Desert Rebel 2.4G USB version, 1:6 R/C Ford Raptor, RC 22" Ferrari 488 GTB, 1:6 R/C Off-Road Rock Fighter, 1:10 Radio Control Vehicle Collection, Assorted, Off-Road Series RC, asst, 1:14 Racing RC, Micro Drone, 1:14 R/C with Lithium Rechargeable Battery, 1:14 R/C Ferrari FXX K with Lithium Rechargeable Battery, 1:14 RC – Lamborghini Centenario with Lithium Rechargeable Battery, Extreme Beast

Model: 81331(14167/81331)

Additional Models: 81157, 81206, 81189, 81153, 81260, 82270, 81601, 82153, 81324, 15004, 15972, 14023, 14066, 14166, 16996, 15906, 15933, 81189, 81206, 15903, 81231, 81261, 81262, 81263, 81264, 81265, 81266, 81267, 81268, 81269, 15932, 82275, 82276, 82133, 82314, 82135, 82136, 82137, 82138, 81332, 81333, 81334, 81335, 81336, 81337, 81338, 81339, 81340, 81601, 14047, 13085, 15002, 15012, 81021, 81022, 81024, 81026, 81028, 81031,81032, 81041, 81042, 81044, 81045, 82151, 82152, 81405, 82111, 82112, 82113, 82114, 82115, 82116, 82117, 82118, 82119, 82120, 82121, 82122, 81602, 81603, 81604, 81605, 81606, 81607, 81608, 81609, 81610, 81134, 81135, 81136, 82277,81019, 81600, 82150, 81405, 82110, 82120, 82121, 81324, 81128

Test Report : SZHH01130342-001S2

Remark: This report supersedes previous report with Report Number:SZHH01130342-001S1dated 30 March 2017. Update Radio Equipment Directive and related tests only.

Test Engineer :	Abel Zhou Senior Engineer	Sign On File
Report Approved By :	Jimmy Wen Assistant Supervisor	
Date :	14 June 2017	

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RADIO PERFORMANCE MEASUREMENTS RESULT SUMMARY

Requirements	ETSI EN 300 440		Condition	Compliance
	Technical requirements	Test Specification		
	Clause Number			
E.I.R.P.	4.2.2	4.2.2.3	Applies to all devices with transmitters	Complied
Permitted range of operating frequencies	4.2.3	4.2.3.3	Applies to all devices with transmitters	Complied
Unwanted emissions in the spurious domain	4.2.4	4.2.4.3	Applies to all devices with transmitters	Complied
Duty Cycle	4.2.5.4	4.2.5.4.3	Transmitting devices which do not use LBT, DAA, or RFID transmitters operating in the 2 446 to 2 454 MHz band transmitting more than 500 mW e.i.r.p. power level	NA
Additional requirements for FHSS equipment	4.2.6	4.2.6.3	Equipment utilizing FHSS modulation	NA
Adjacent channel selectivity	4.3.3	4.3.3.3	Applies to equipment Category 1 receivers	N/A
Blocking or desensitization	4.3.4	4.3.4.3	Applies to category 1 and 2 receivers	N/A
Spurious radiation	4.3.5	4.3.5.3	Applies to all receivers, except receivers used in combination with permanently co-located transmitters continuously transmitting	Complied
When determining the test conclusion, the Measurement Uncertainty of test has been considered. Note: N/A means Not apply.				



EMC COMPLIANCE MEASUREMENTS RESULT SUMMARY

	ETSI EN 301 489-3	ETSI EN 301 489-1	Compliance
	Clause Number		
EMC Emission	7.1	8.2	Complied
Electrostatic Discharge	7.2	9.3	Complied
Radio Frequency Electromagnetic Field (80MHz-6GHz)	7.2	9.2	Complied

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

EQUIPMENT UNDER TEST (EUT)

INFORMATION

Applicant : MAY CHEONG TOY PRODUCTS FTY., LTD
UNIT 901-2, 9/F., EAST OCEAN CENTRE,
98 GRANVILLE ROAD, TSIMSHATSUI EAST,
KOWLOON, HONG KONG

Description of EUT : R/C ROCK CRAWLER 6X6
Brand Name(s)/ Type : Maisto/81331(14167/81331)
Serial Number(s) : Not Labelled

Equipment Received : 20 May 2017

Test Date(s) : 20 May 2017 to 14 June 2017

Classification of EUT : Class 3 Type III

Extreme Temp.: -20 °C to 55 °C

Modulation Type: GFSK

Antenna Type: Integral Antenna of Control Unit and Receiver Unit

Test Specification(s) : ETSI EN 300 440 V2.1.1 (2017-03)
Draft ETSI EN 301 489-1: V2.2.0 (2017-03)
Final Draft ETSI EN 301 489-3: V2.1.1 (2017-03)

CONTENTS

EXHIBIT 1 GENERAL DESCRIPTION

1	Introduction	7
2	Test Specification	7

EXHIBIT 2 TEST RESULT OF RADIO PERFORMANCE MEASUREMENTS

3	Equivalent Isotropically Radiated Power (EIRP)	10
4	Permitted Range of Operating Frequencies	13
5	Unwanted emissions in the spurious domain	16
6	Spurious radiation	20

EXHIBIT 3 TEST RESULT OF EMC COMPLIANCE MEASUREMENTS

7	EMC Emission Test	23
8	Electrostatic Discharge	25
9	Radio Frequency Electromagnetic Field	27

EXHIBIT 4 PHOTO OF EUT

10	EUT Photos	30
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EXHIBIT 1

GENERAL DESCRIPTION

1 INTRODUCTION

Intertek Testing Services Shenzhen Limited Longhua Branch has tested the MAY CHEONG TOY PRODUCTS FTY., LTD 81331(14167/81331), R/C ROCK CRAWLER 6X6. The sample was tested to the relevant performance specification published by the European Telecommunications Standards Institute. This report contains the results of these tests and is submitted to MAY CHEONG TOY PRODUCTS FTY., LTD as the final test results.

The models: 81331, 81157, 81206, 81189, 81153, 81260, 82270, 81601, 82153, 81324, 81019, 81600, 82150, 81405, 82110, 82120, 82121, 81324, 81128 are package numbers. The model: 81331 include a transmitter and a receiver, the transmitter model number is 14167, receiver model number is 81331, the additional receiver model: 14066, 14166, 16996, 15906, 15933, 81189, 81206, 81021, 81022, 81024, 81026, 81028, 81031,81032, 81041, 81042, 81044, 81045, 82151, 82152, 81405, 82111, 82112, 82113, 82114, 82115, 82116, 82117, 82118, 82119, 82120, 82121, 82122, 81602, 81603, 81604, 81605, 81606, 81607, 81608, 81609, 81610, 81134, 81135, 81136, 82277 are same as the model: 81331 in hardware aspect, the additional transmitter models: 15004, 15972, 14023, 14047, 13085, 15002, 15012 are same as the model: 14167 in hardware aspect. Theirs difference in the appearance and model number.

The production units are required to conform to the initial sample as received when the units are placed on the market.

2 TEST SPECIFICATION

2.1 RELEVANT PERFORMANCE SPECIFICATION

The relevant performance specification for MAY CHEONG TOY PRODUCTS FTY., LTD 81331(14167/81331), R/C ROCK CRAWLER 6X6 are ETSI EN 300 440 V2.1.1 (2017-03). The harmonised standards are ETSI EN 300 440 V2.1.1 (2017-03), Final Draft ETSI EN301 489-3 V2.1.1 (2017-03) and Draft ETSI EN301 489-1 V2.2.0 (2017-03).

The tests performed are those required to demonstrate compliance with the technical specifications and the essential requirements of Article 3.1(b) and 3.2 of the Radio Equipment Directive - RED for regulatory purposes.

2.2 TEST ENVIRONMENT

The tests were performed in the Radio communications Test Facility at Intertek Testing Services Shenzhen Limited (CNAS No.: L0220), Shenzhen EMTEK Co., Ltd. (CNAS No.: L2291). The tests were performed in the Radio communications and Electromagnetic Compatibility Test Facility at Intertek Testing Services Shenzhen Limited. The sample was subjected to the ambient conditions in the laboratory and indoor test site except during tests at extremes of temperatures and the Radiated Emissions Tests. The temperature and relative humidity recorded during the period of each test are given in the results.

2.3 CONFIGURATION OF TEST SAMPLE

The test samples consisted of one transmitter (Control Unit) and one receiver (Receive Unit).

2.4 TEST POWER SOURCES

The Control Unit is intended to operate from 3.0VDC (2 x 1.5V AA batteries). The Receive Unit is powered by 6.4VDC (1 x 6.4V Internal Rechargeable battery). The test power source voltages declared by the manufacturer were:

Control Unit:

Nominal test voltage	3.0VDC
Lower extreme test voltage	2.4VDC
Upper extreme test voltage	3.0VDC

Receive Unit:

Nominal test voltage	6.4VDC
Lower extreme test voltage	5.12VDC
Upper extreme test voltage	6.4VDC

2.5 TEST FREQUENCIES

The sample supplied operated nominally at 2.410- 2.471GHz for transceiver. The tests were carried out on channel Low, Medium and High of the alignment range.

2.6 MEASUREMENT UNCERTAINTY

All measurement uncertainties stated in this report are estimated to a 95% confidence level.

2.7 SUPPORT EQUIPMENT - RADIO PERFORMANCE MEASUREMENTS

N/A

2.8 SUPPORT EQUIPMENT - EMC COMPLIANCE MEASUREMENTS

N/A

2.9 PERFORMANCE CRITERIA

2.9.1 PERFORMANCE CRITERIA FOR CONTINUOUS PHENOMENA (CT & CR)

During test, there may be loss of function but there should be no unintentional responses. After test, EUT should operate as intended. Lost functions should be self-recoverable.

2.9.2 PERFORMANCE CRITERIA FOR TRANSIENT PHENOMENA (TT & TR)

At the conclusion of each exposure the EUT shall operated with no user noticeable loss of communication link.

Where the EUT is transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur.

EXHIBIT 2

TEST RESULT

OF

RADIO PERFORMANCE MEASUREMENTS

3 EQUIVALENT ISOTROPICALLY RADIATED POWER (E.I.R.P.)

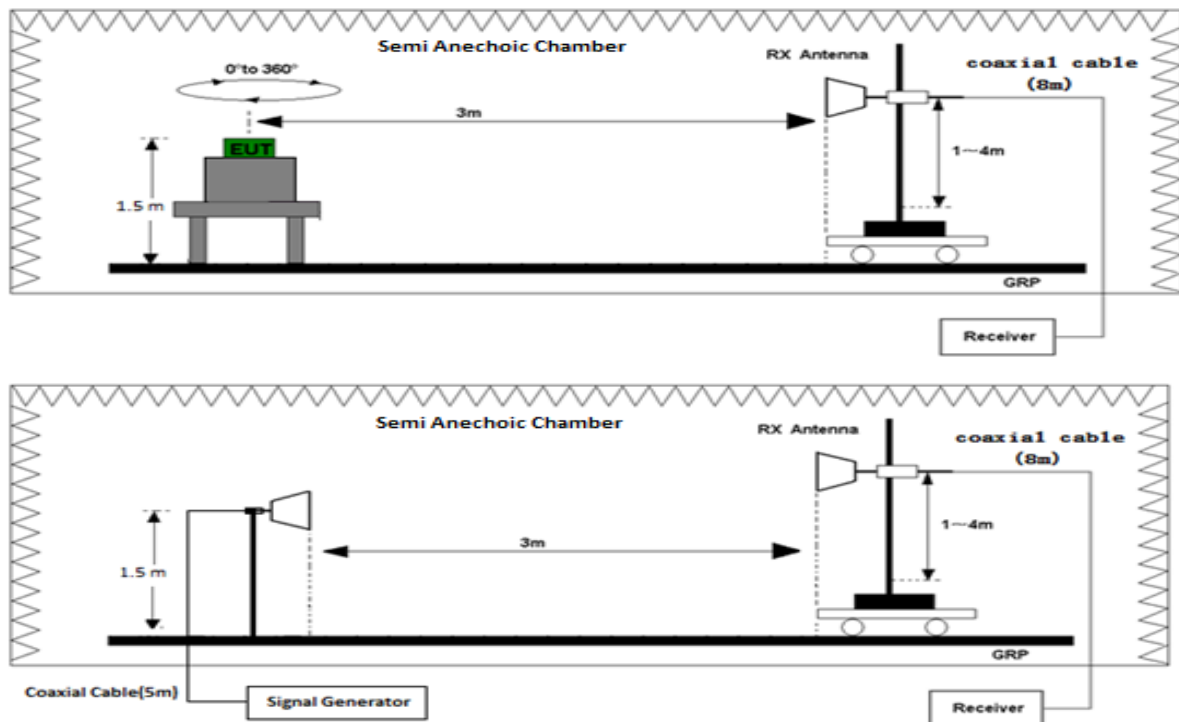
3.1 TEST METHOD AND SUMMARY

Basic Standard :	ETSI EN 300 440 V2.1.1 (2017-03)
Clause :	4.4.2
Test method	Radiated measurement

3.2 EQUIPMENT LIST

Equip No.	Description	Manufacturer	Model No.	Cal. Date	Due Date
SZ061-12	Biconilog Antenna	ETS	3142E	15-Sep-16	15-Sep-17
SZ016-12	Temperature & Humidity Chamber	Terchy	MHK-120NK	23-Jun-16	23-Jun-17
SZ185-01	EMI Receiver	R&S	ESCI	23-Jun-16	23-Jun-17
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	16-Apr-16	16-Apr-18
SZ056-06	Signal Analyzer	R&S	FSV40	02-Jul-16	02-Jul-17
SZ056-03	Spectrum Analyzer	R&S	FSP30	23-Jun-16	23-Jun-17
SZ006-12	AC Power Source	APC	AFC-11005GS	25-Dec-16	25-Jul-17

3.3 Test Setup



Test set-up of radiated disturbance (above 1GHz)

3.4 TEST RESULT

Ambient Test Conditions: Temperature 25°C; Humidity 50%
(Control Unit)

Test Conditions			Power (dBm)	Limit (dBm)	Margin (dB)	
Temperature(°C) Humidity(%)	Voltage	CH				
Tmin 25 °C Hmin 50%	<input type="checkbox"/> VDC nom 3.0VDC	L 2410(MHz)	-0.6	10.0	-10.6	
	<input type="checkbox"/> VDC max 3.0VDC		-0.4	10.0	-10.4	
Tmin -10 °C Hmin 0%	<input type="checkbox"/> VDC min 2.4VDC		-0.5	10.0	-10.5	
	<input type="checkbox"/> VDC max 3.0VDC		-0.7	10.0	-10.7	
Tmax 55 °C Hmax 50%	<input type="checkbox"/> VDC min 2.4VDC		-0.6	10.0	-10.6	
	<input type="checkbox"/> VDC nom 3.0VDC		M 2450(MHz)	-0.7	10.0	-10.7
Ambient	<input type="checkbox"/> VDC max 3.0VDC			-0.5	10.0	-10.5
Tmin -10 °C Hmin 0%	<input type="checkbox"/> VDC min 2.4VDC			-0.7	10.0	-10.7
	<input type="checkbox"/> VDC max 3.0VDC	-0.6		10.0	-10.6	
Tmax 55 °C Hmax 50%	<input type="checkbox"/> VDC min 2.4VDC	-0.7		10.0	-10.7	
	<input type="checkbox"/> VDC nom 3.0VDC	H 2471(MHz)		-1.4	10.0	-11.4
Ambient	<input type="checkbox"/> VDC max 3.0VDC			-1.2	10.0	-11.2
Tmin -10 °C Hmin 0%	<input type="checkbox"/> VDC min 2.4VDC			-1.4	10.0	-11.4
	<input type="checkbox"/> VDC max 3.0VDC		-1.3	10.0	-11.3	
Tmax 55 °C Hmax 50%	<input type="checkbox"/> VDC min 2.4VDC		-1.5	10.0	-11.5	

Notes:

1. Negative sign (-) in the margin column signify levels below the limit.
2. 10 dBm corresponds to 10 mW.
3. Measurement Uncertainty : ±4.8dB.
4. Cable loss and antenna gain was combined in the calculated result.

(Receive Unit)

Test Conditions			Power (dBm)	Limit (dBm)	Margin (dB)	
Temperature(°C) Humidity(%)	Voltage	CH				
Ambient	<input type="checkbox"/> VDC nom 6.4VDC	2410.000	-0.9	10.0	-10.9	
Tmin -10 °C Hmin 0%	<input type="checkbox"/> VDC max 6.4VDC		-0.7	10.0	-10.7	
	<input type="checkbox"/> VDC min 5.12VDC		-0.9	10.0	-10.9	
Tmax 55 °C Hmax 50%	<input type="checkbox"/> VDC max 6.4VDC		-0.8	10.0	-10.8	
	<input type="checkbox"/> VDC min 5.12VDC		-1.0	10.0	-11.0	
Ambient	<input type="checkbox"/> VDC nom 6.4VDC		2450.000	-2.2	10.0	-12.2
Tmin -10 °C Hmin 0%	<input type="checkbox"/> VDC max 6.4VDC			-2.0	10.0	-12.0
	<input type="checkbox"/> VDC min 5.12VDC			-2.1	10.0	-12.1
Tmax 55 °C Hmax 50%	<input type="checkbox"/> VDC max 6.4VDC	-2.3		10.0	-12.3	
	<input type="checkbox"/> VDC min 5.12VDC	-2.4		10.0	-12.4	
Ambient	<input type="checkbox"/> VDC nom 6.4VDC	2471.000		-0.3	10.0	-10.3
Tmin -10 °C Hmin 0%	<input type="checkbox"/> VDC max 6.4VDC			-0.1	10.0	-10.1
	<input type="checkbox"/> VDC min 5.12VDC			-0.4	10.0	-10.4
Tmax 55 °C Hmax 50%	<input type="checkbox"/> VDC max 6.4VDC		-0.4	10.0	-10.4	
	<input type="checkbox"/> VDC min 5.12VDC		-0.5	10.0	-10.5	

Notes:

1. Negative sign (-) in the margin column signify levels below the limit.
2. 10 dBm corresponds to 10 mW.
3. Measurement Uncertainty : ± 4.8 dB.
4. Cable loss and antenna gain was combined in the calculated result.

4 PERMITTED RANGE OF OPERATING FREQUENCIES

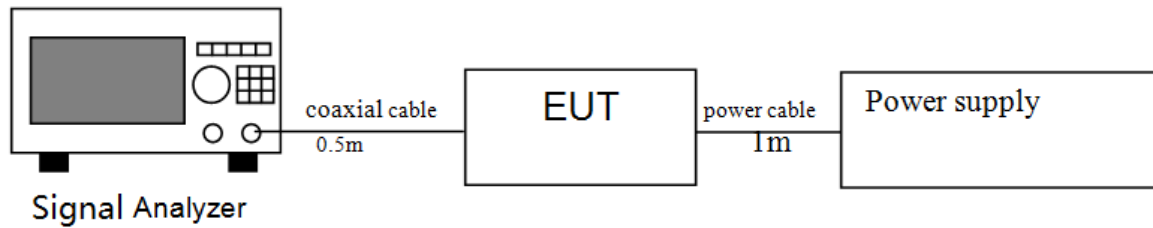
4.1 TEST METHOD AND SUMMARY

Basic Standard :	ETSI EN 300 440 V2.1.1 (2017-03)
Clause :	4.2.3
Test method	Conducted measurements

4.2 EQUIPMENT LIST

Equip No.	Description	Manufacturer	Model No.	Cal. Date	Due Date
SZ056-06	Signal Analyzer	R&S	FSV40	02-Jul-16	02-Jul-17
SZ016-12	Temperature & Humidity Chamber	Terchy	MHK-120NK	23-Jun-16	23-Jun-17
SZ006-12	AC Power Source	APC	AFC-11005GS	25-Dec-16	25-Jul-17

4.3 Test Setup



4.4 TEST RESULT
PERMITTED RANGE OF OPERATING FREQUENCIES
CONTROL UNIT

Test Conditions			Frequency Range (GHz)	
Temperature (°C) Humidity (%)	Voltage	CH	F _L	F _H
T _{nom} 25°C H _{nom} 50%	VDC _{nom} 3.0VDC	Low, High	2.409119	2.472664
T _{min} -10°C H _{min} 0%	VDC _{max} 3.0VDC		2.409110	2.472670
	VDC _{min} 2.4VDC		2.409120	2.472665
T _{max} 55°C H _{max} 50%	VDC _{max} 3.0VDC		2.409118	2.472668
	VDC _{min} 2.4VDC		2.409121	2.472664
Measurement Uncertainty			± 240Hz	

RECEIVE UNIT

Test Conditions			Frequency Range (GHz)	
Temperature (°C) Humidity (%)	Voltage	CH	F _L	F _H
T _{nom} 25°C H _{nom} 50%	VDC _{nom} 6.4VDC	Low, High	2.409349	2.472550
T _{min} -10°C H _{min} 0%	VDC _{max} 6.4VDC		2.409340	2.472560
	VDC _{min} 5.12VDC		2.409350	2.472552
T _{max} 55°C H _{max} 50%	VDC _{max} 6.4VDC		2.409348	2.472548
	VDC _{min} 5.12VDC		2.409349	2.472546
Measurement Uncertainty			± 240Hz	

BAND EDGE WORSE RESULT
Control Unit:

		Frequency (GHz)	Within Assigned Frequency Band
Lowest F_L	F_{LB}	2.409110	Complied
Highest F_H	F_{HB}	2.472670	Complied

Receive Unit:

		Frequency (GHz)	Within Assigned Frequency Band
Lowest F_L	F_{LB}	2.409340	Complied
Highest F_H	F_{HB}	2.472560	Complied

where

- F_{LB} Lowest frequency at appropriate spurious emission level
- F_{HB} Highest frequency at appropriate spurious emission level

EUT was tested during absence of modulation.

The permitted range of modulation bandwidth must be within the limits of the assigned frequency band 2.4-2.4835 GHz.

OCCUPIED BANDWIDTH
CONTROL UNIT

Frequency (MHz)	99% Bandwidth (MHz)	FL at 99% BW (MHz)	FH at 99% BW (MHz)	Result
2409.320	1.158	2409.320	2410.478	Pass
2471.478	1.143	2470.334	2471.478	Pass

RECEIVE UNIT

Frequency (MHz)	99% Bandwidth (MHz)	FL at 99% BW (MHz)	FH at 99% BW (MHz)	Result
2409.349	2.272	2409.349	2411.621	Pass
2471.521	2.330	2469.191	2471.521	Pass

5 UNWANTED EMISSION IN THE SPURIOUS DOMAIN FOR TRANSMITTERS

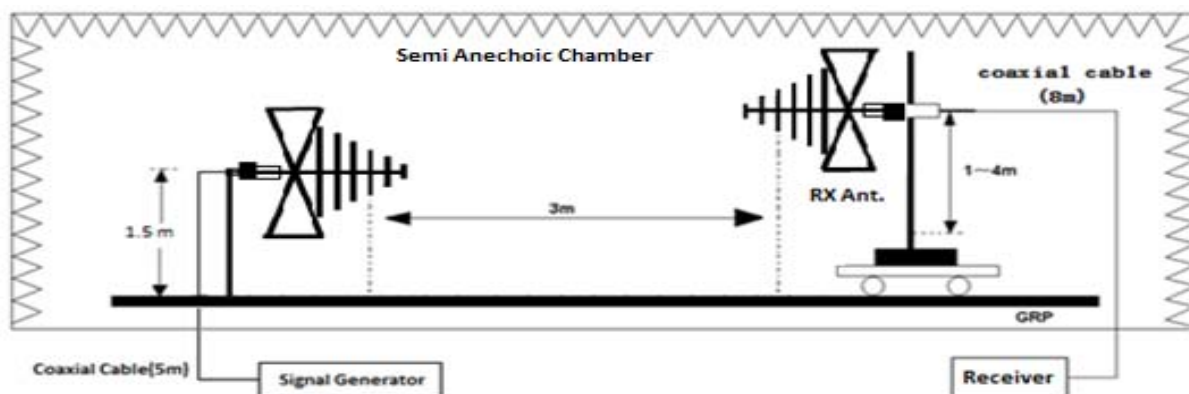
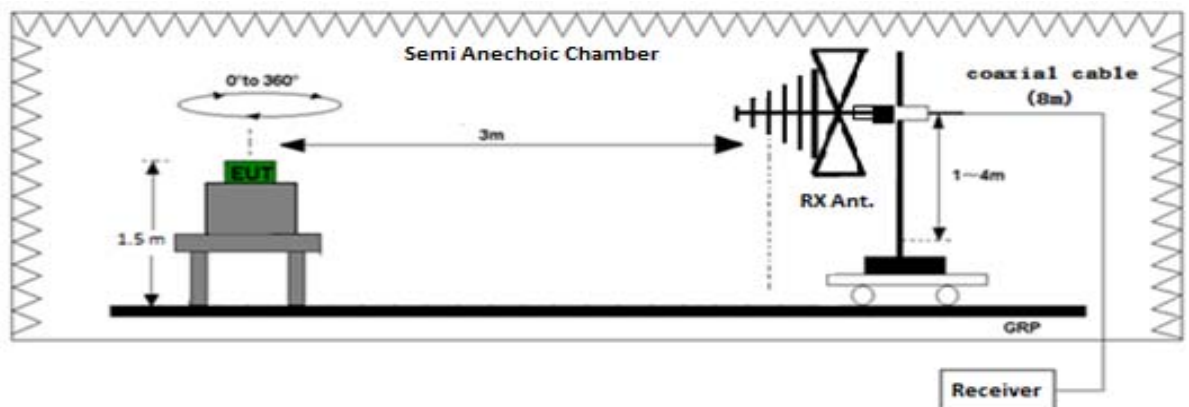
5.1 TEST METHOD AND SUMMARY

Basic Standard :	ETSI EN 300 440 V2.1.1 (2017-03)
Clause :	4.2.4
Test method	Radiated measurements

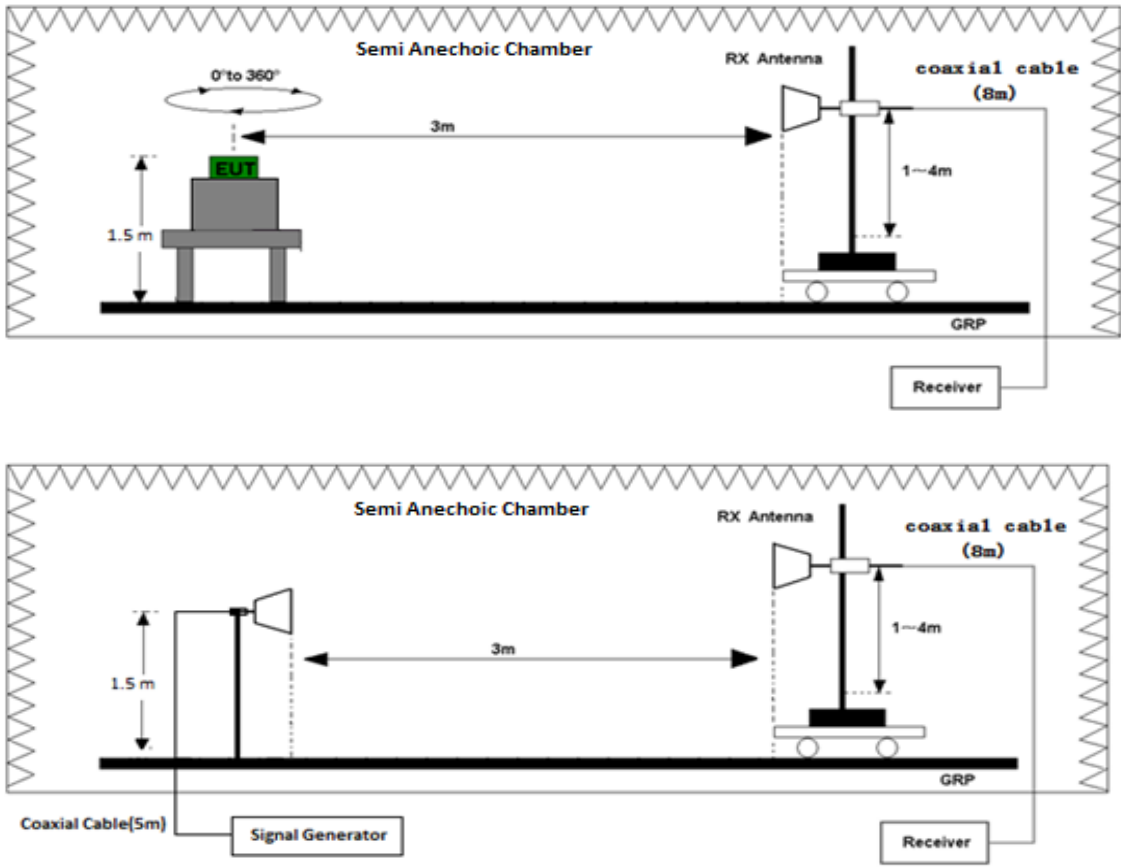
5.2 EQUIPMENT LIST

Equip No.	Description	Manufacturer	Model No.	Cal. Date	Due Date
SZ056-06	Signal Analyzer	R&S	FSV40	2-Jul-2016	2-Jul-2017
SZ061-12	BiConiLog Antenna	ETS	3142E	9-Sep-2016	9-Sep-2017
SZ061-09	Double - Ridged Waveguide Horn Antenna	ETS	3115	27-Oct-2016	27-Oct-2017
SZ181-04	Preamplifier	Agilent	8449B	9-Feb-2017	9-Feb-2018
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	16-Jan-2017	16-Jan-2019

5.3 Test Setup



Test set-up of radiated disturbance (30MHz-1GHz)



Test set-up of radiated disturbance (above 1GHz)

5.4 Test Result

Test Conditions: Temperature 25.0°C; Humidity 50.0%

SPURIOUS EMISSIONS – OPERATING

The Channel: Low, Middle, High had been tested, and showed the worse data in the report.

(Control Unit)

Channel: Low			
Frequency (MHz)	Measured Power (dBm)	Limit (dBm)	Margin (dB)
4820.000	-33.4	-30.0	-3.4
7230.000	-31.6	-30.0	-1.6

Channel: Medium			
Frequency (MHz)	Measured Power (dBm)	Limit (dBm)	Margin (dB)
4900.000	-32.0	-30.0	-2.0
7350.000	-31.6	-30.0	-1.6

Channel: High			
Frequency (MHz)	Measured Power (dBm)	Limit (dBm)	Margin (dB)
4942.000	-33.4	-30.0	-3.4
7413.000	-31.4	-30.0	-1.4

(Receive Unit)

Channel: Low			
Frequency (MHz)	Measured Power (dBm)	Limit (dBm)	Margin (dB)
4820.000	-36.5	-30.0	-6.5
7230.000	-31.2	-30.0	-1.2

Channel: Medium			
Frequency (MHz)	Measured Power (dBm)	Limit (dBm)	Margin (dB)
4900.000	-37.7	-30.0	-7.7
7350.000	-31.9	-30.0	-1.9

Channel: High			
Frequency (MHz)	Measured Power (dBm)	Limit (dBm)	Margin (dB)
4942.000	-37.6	-30.0	-7.6
7413.000	-31.9	-30.0	-1.9

Notes:

1. Negative sign (-) in the margin column signify levels below the limit.
2. Other emissions found were at least 10 dB below the limit.
3. -30 dBm corresponds to 1 μ W.
4. Measurement Uncertainty: ± 4.8 dB.
5. Correction value was combined in the calculated result.

5.5 SPURIOUS EMISSIONS - STANDBY

There were no emissions found above system measuring level (at least 10 dB below the limit).

6 SPURIOUS RADIATIONS FOR RECEIVERS

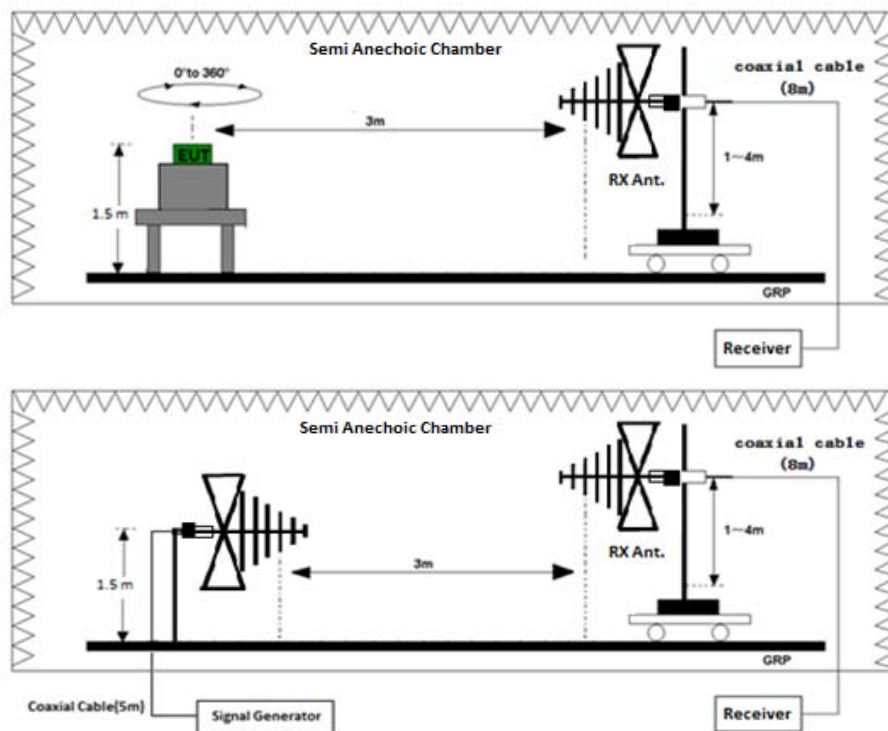
6.1 TEST METHOD AND SUMMARY

Basic Standard :	ETSI EN 300 440 V2.1.1 (2017-03)
Clause :	4.3.5
Test method	Radiated measurements

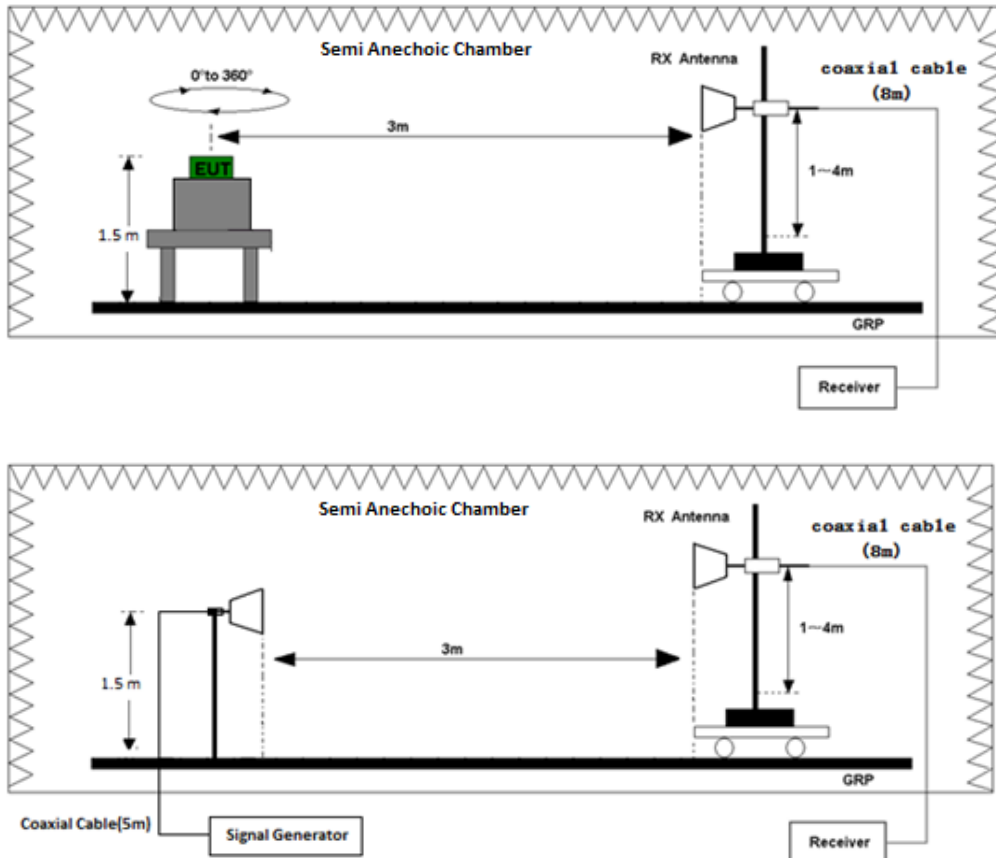
6.2 EQUIPMENT LIST

Equip No.	Description	Manufacturer	Model No.	Cal. Date	Due Date
SZ056-06	Signal Analyzer	R&S	FSV40	2-Jul-2016	2-Jul-2017
SZ061-12	BiConiLog Antenna	ETS	3142E	9-Sep-2016	9-Sep-2017
SZ061-09	Double - Ridged Waveguide Horn Antenna	ETS	3115	27-Oct-2016	27-Oct-2017
SZ181-04	Preamplifier	Agilent	8449B	9-Feb-2017	9-Feb-2018
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	16-Jan-2017	16-Jan-2019

6.3 Test Setup



Test set-up of radiated disturbance (30MHz-1GHz)



Test set-up of radiated disturbance (above 1GHz)

6.4 Test Result

Test Conditions: Temperature 27.1°C; Humidity 68%

SPURIOUS EMISSIONS - OPERATING

There were no emissions found above system measuring level (at least 10 dB below the limit).

SPURIOUS EMISSIONS - STANDBY

There were no emissions found above system measuring level (at least 10 dB below the limit).

Notes:

1. Negative sign (-) in the margin column signify levels below the limit.
2. Other emissions found were at least 10 dB below the limit.
3. -57 dBm corresponds to 2nW, -47 dBm corresponds to 20nW.
4. Measurement Uncertainty : ±5.0dB.

EXHIBIT 3

TEST RESULT OF EMC COMPLIANCE MEASUREMENTS

7 EMC EMISSION TEST

7.1 RADIATED EMISSION TEST

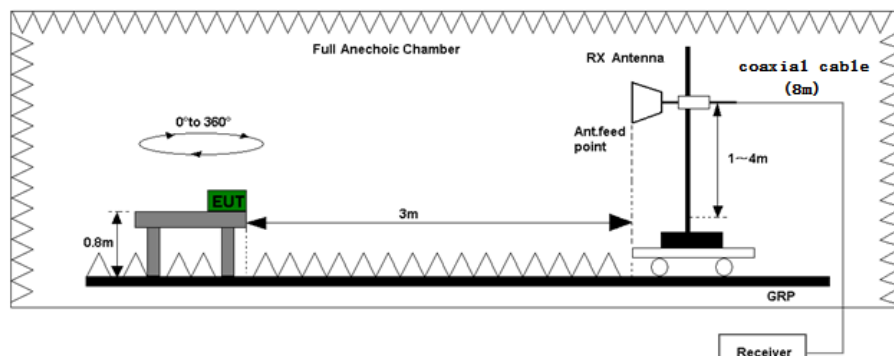
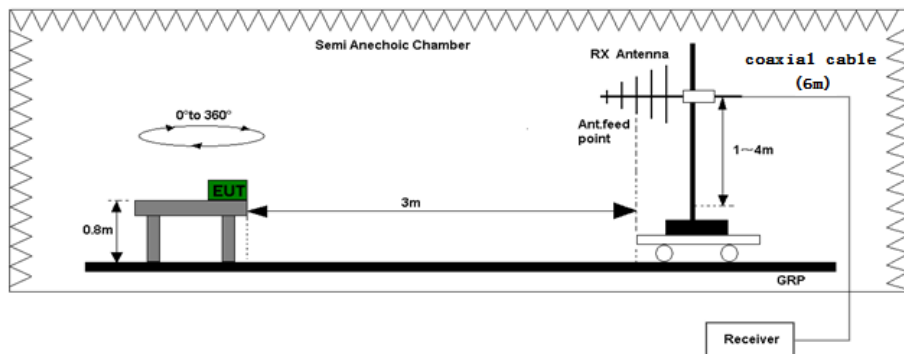
7.2 TEST METHOD AND SUMMARY

Basic Standard :	EN55032: 2015
Test :	Radiated Emission
Classification :	Class B
Port :	Enclosure Port of Ancillary Equipment

7.3 TEST EQUIPMENT

Equip No.	Description	Manufacturer	Model No.	Cal. Date	Due Date
SZ185-01	EMI Receiver	R & S	ESCI	23-Jun-16	23-Jun-17
SZ061-12	Biconilog Antenna	ETS	3142E	15-Sep-16	15-Sep-17
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	16-Apr-16	16-Apr-18

7.4 TEST SETUP



7.5 TEST RESULT

Worst-case Operating Mode: Forward Running (Motoring)

30MHz - 1GHz radiated disturbance Data Table

Polarization	Frequency (MHz)	Net at 3m (dB μ V/m)	Calculated Net at 10m (dB μ V/m)	Limit at 10m (dB μ V/m)	Margin (dB)
H	294.325	29.8	19.3	37.0	-17.7
H	604.240	36.4	25.9	37.0	-11.1
H	838.495	35.0	24.5	37.0	-12.5
V	389.385	32.0	21.5	37.0	-15.5
V	604.725	36.3	25.8	37.0	-11.2
V	861.290	35.0	24.5	37.0	-12.5

- Notes:
1. Quasi-Peak Detector Data
 2. Negative sign (-) in the margin column signify levels below the limit
 3. Frequency range scanned: 30 MHz to 1000 MHz
 4. Only emissions significantly above equipment noise floor are reported.

1GHz - 6GHz radiated disturbance Data Table

Polarization	Frequency (MHz)	Net at 3m Average (dB μ V/m)	Net at 3m Peak (dB μ V/m)	Limit at 3m Average (dB μ V/m)	Limit at 3m Peak (dB μ V/m)	Margin Average (dB μ V/m)	Margin Peak (dB μ V/m)
\	\	\	\	\	\	\	\

- Notes:
1. Frequency range scanned: 1000 MHz to 6000 MHz.
 2. Only emissions significantly above equipment noise floor are reported.
 3. Negative value in the margin column shows emission below limit.

7.6 MEASUREMENT UNCERTAINTY

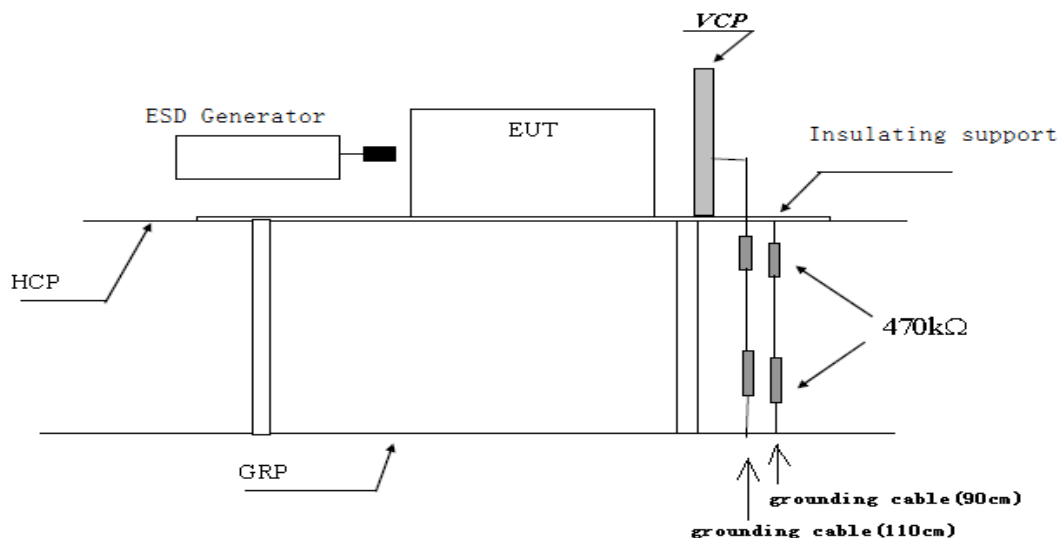
Measurement Uncertainties: ± 4.8 dB. The measured result is above the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance is more probable than non-compliance with the specification limit.

8 ELECTROSTATIC DISCHARGE

8.1 TEST METHOD AND SUMMARY

Basic Standard :	EN 61000-4-2: 2009
Port :	Enclosure
Required Performance Criterion :	TT & TR
Level :	± 2.0, ± 4.0, ±8.0 kV (Air Discharge) ± 2.0, ±4.0 kV (Contact Discharge) ± 2.0, ±4.0 kV (Indirect Contact Discharge)
No. of Discharge(s) :	Minimum of 10 Discharges per Each Polarity
Time Between Each Discharge :	1 second
Test Mode :	TX : Stand-by and Transmission, Power-Off RX : Stand-by and Operating (Motor), Power-Off
Test Setup :	Table-top
Temperature :	25.1 ⁰ C
Relative Humidity :	48.6%
Test of Post-installation :	N/A

8.2 TEST SETUP



Test set-up of electrostatic discharge

8.3 TEST EQUIPMENT

Equipment No.	Equipment	Manufacturer	Model No.	Cal. Date	Due Date
SZ189-03	ESD Simulator	Teseq	NSG 435	14-Nov-16	14-Nov-17

8.4 TEST RESULT

Discharge Type	Applied Voltage	Result (Pursuant to ETSI EN 301 489-3 Criterion TT & TR)
Contact Discharge	$\pm 2.0, \pm 4\text{kV}$	Complied
Air Discharge	$\pm 2, \pm 4, \pm 8\text{kV}$	Complied
Indirect HCP Discharge	$\pm 2.0, \pm 4\text{kV}$	Complied
Indirect VCP Discharge	$\pm 2.0, \pm 4\text{kV}$	Complied

8.5 ADDITIONAL RESULT INFORMATION

The EUT worked normally as intended during and after the test. No any observable change occurred.

9 RADIO FREQUENCY ELECTROMAGNETIC FIELD

9.1 TEST METHOD AND SUMMARY

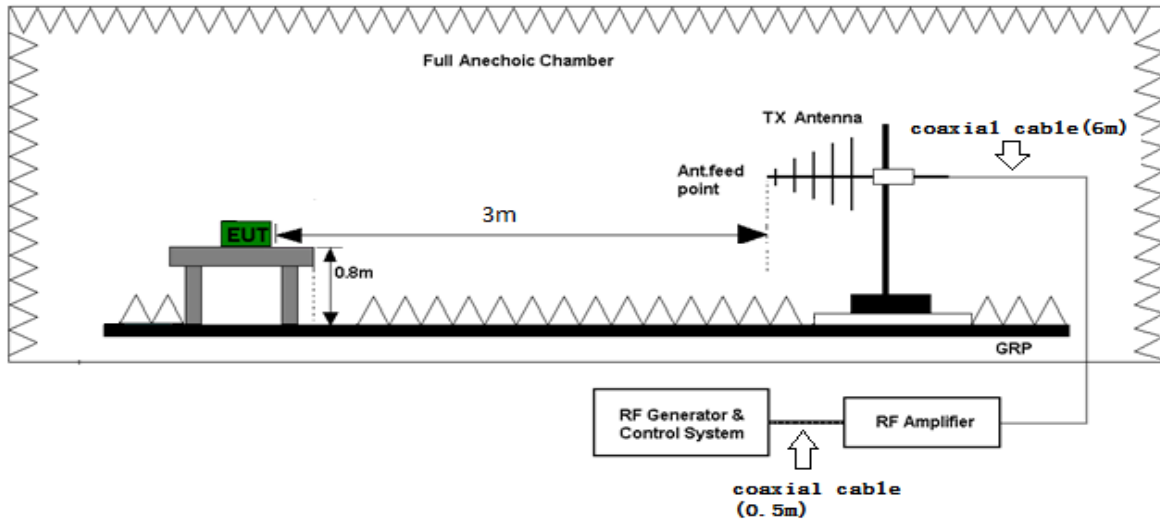
Basic Standard :	EN 61000-4-3: 2006 + A1: 2008 + A2: 2010
Port :	Enclosure
Required Performance Criterion :	CT & CR
Level :	3.0 V/m (rms)
Test Modulation :	1kHz, 80% AM
Frequency :	80 MHz to 6000 MHz
Dwell Time :	1s
Frequency Step :	10%
Temperature :	27.1 ⁰ C
Relative Humidity :	59.7%
Test Facility :	Full Anechoic Chamber
Antenna Polarization :	Horizontal and Vertical
Type of Antenna :	Broadband Antenna
Test Distance :	3m
Test Mode :	TX : Stand-by and Transmission, Power-Off RX : Stand-by and Operating (Motor), Power-Off
Test Setup :	Table-top

* The Equipment would be verified together with the test system before testing.

9.2 TEST EQUIPMENT

Equipment No.	Equipment	Manufacturer	Model No.	Cal. Date	Due Date
SZ061-04	BiConiLog Antenna	ETS	3142C	27-Jun-16	27-Dec-17
SZ180-01	Signal Generator	R&S	SML03	27-Jun-16	27-Dec-17
SZ181-01	Amplifier	PRANA	AP32 MT215	10-Jun-16	10-Jun-17
SZ181-02	Power Amplifier	MILMEGA	AS0825-35	30-Dec-16	30-Jun-17
SZ182-01	RF Power Meter	BOONTON	4232A	10-Jun-16	10-Jun-17
SZ188-02	Anechoic Chamber	ETS	RFD-F/A-100	30-Dec-16	30-Jun-17
SZ062-02	RF Cable	RADIALL	RG 213U(6M)	20-Jun-16	20-Jun-17
SZ186-01	Field Probe	ETS	HI-6105	30-Jun-16	30-Jun-17
SZ070-05	Directional Coupler	Agilent	87300C	30-Dec-16	30-Jun-17

9.3 TEST SETUP



Test set-up of Immunity to Radiated Electric Fields

9.4 TEST RESULT

Frequency (MHz)	Exposed Side	Result (Pursuant to ETSI EN 301 489-3 Criterion CT & CR)
80 to 6000	Front	Complied
80 to 6000	Left	Complied
80 to 6000	Rear	Complied
80 to 6000	Right	Complied

9.5 ADDITIONAL RESULT INFORMATION

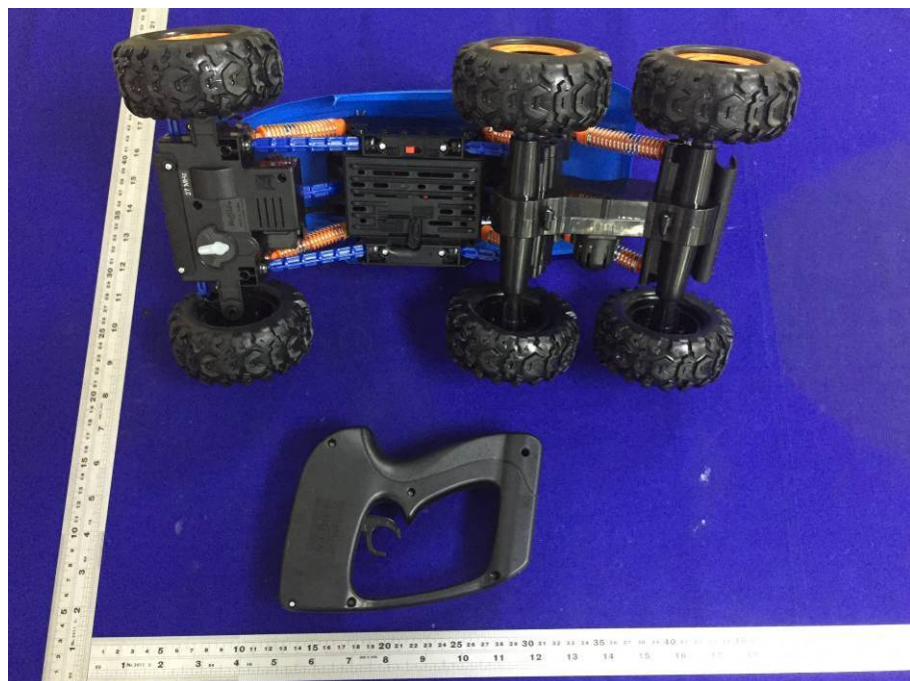
The EUT worked normally as intended during and after the test. No any observable change occurred.

EXHIBIT 4

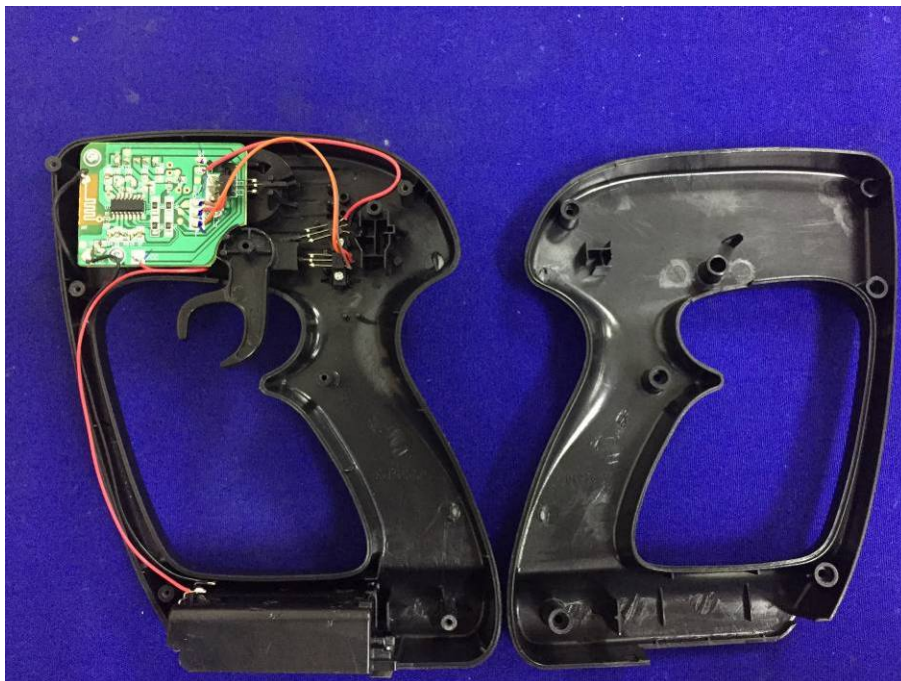
PHOTOS OF EUT

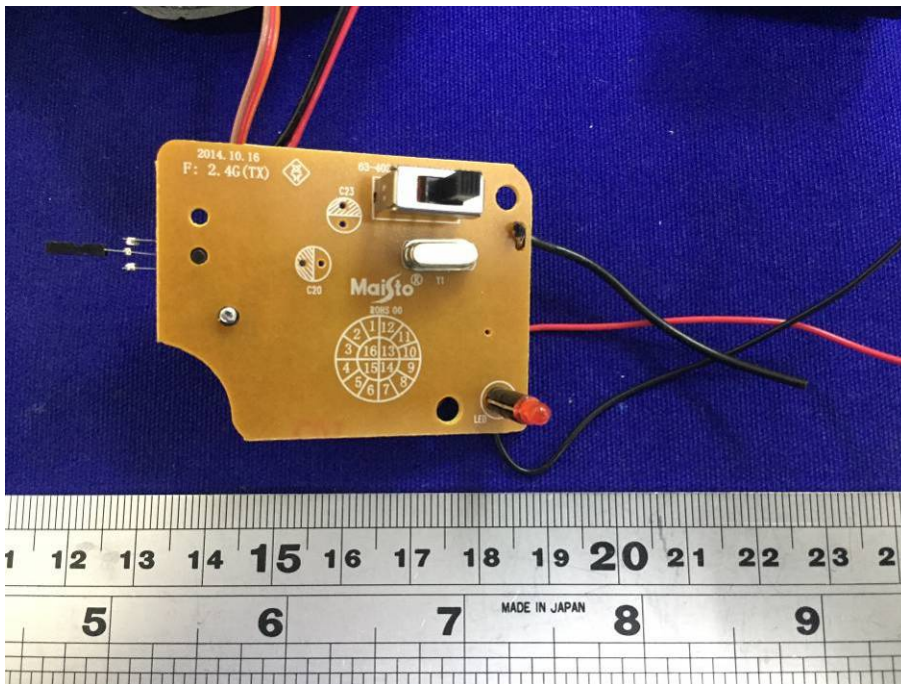
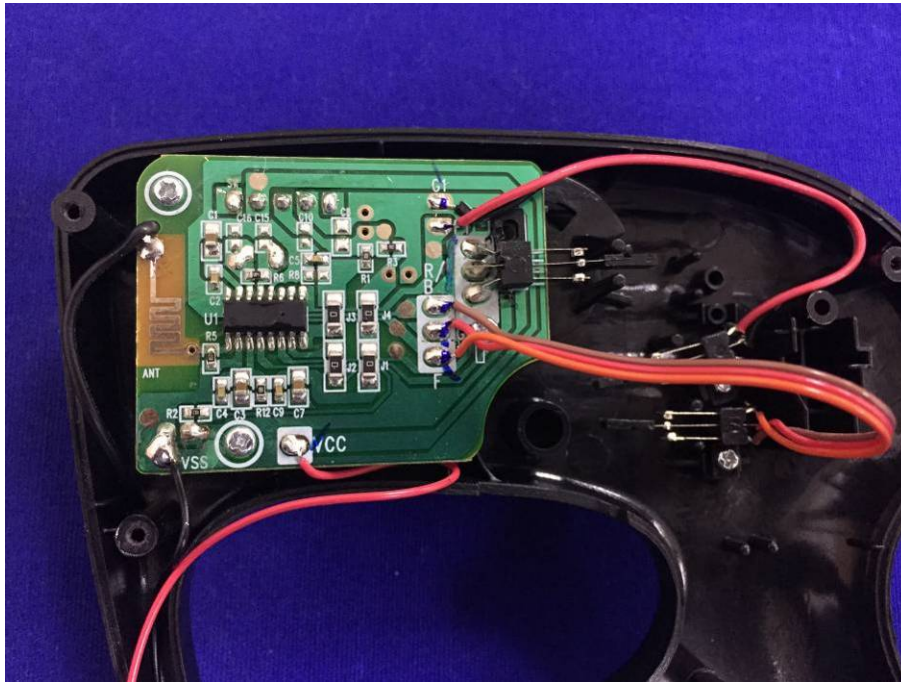
10 EUT PHOTOS

10.1 EXTERNAL PHOTOS

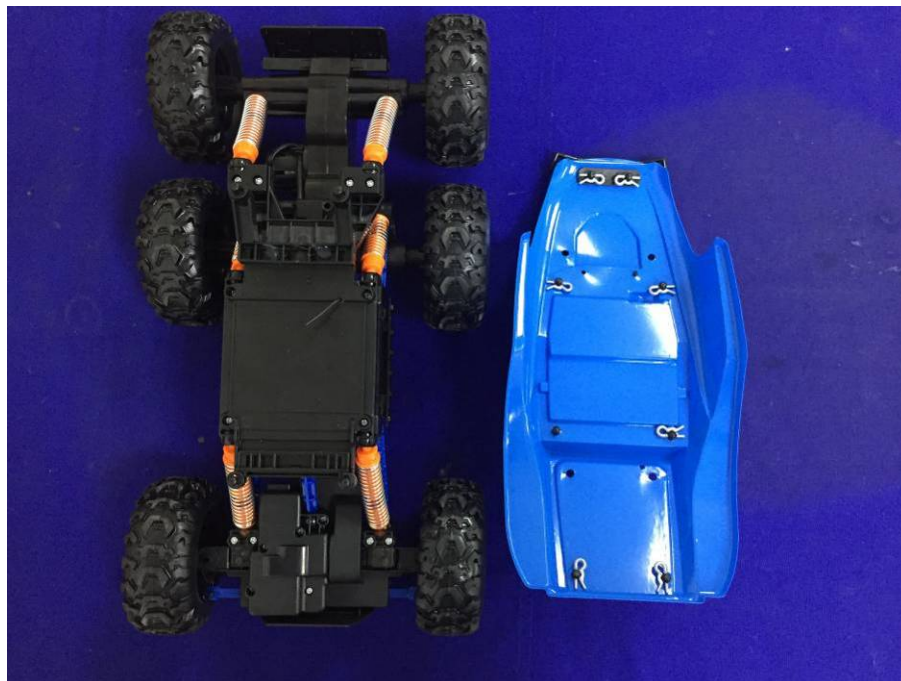
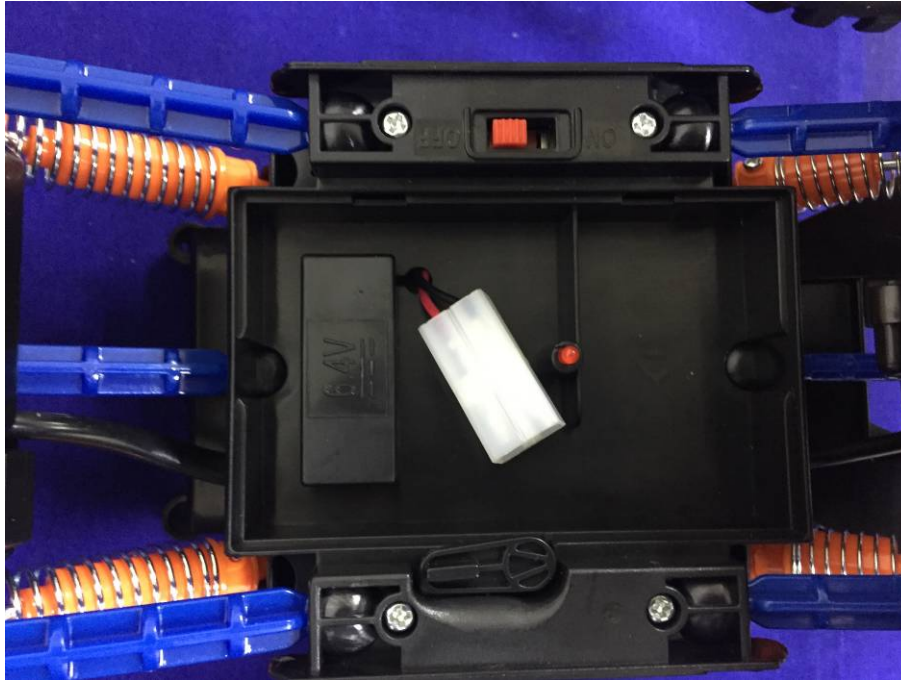


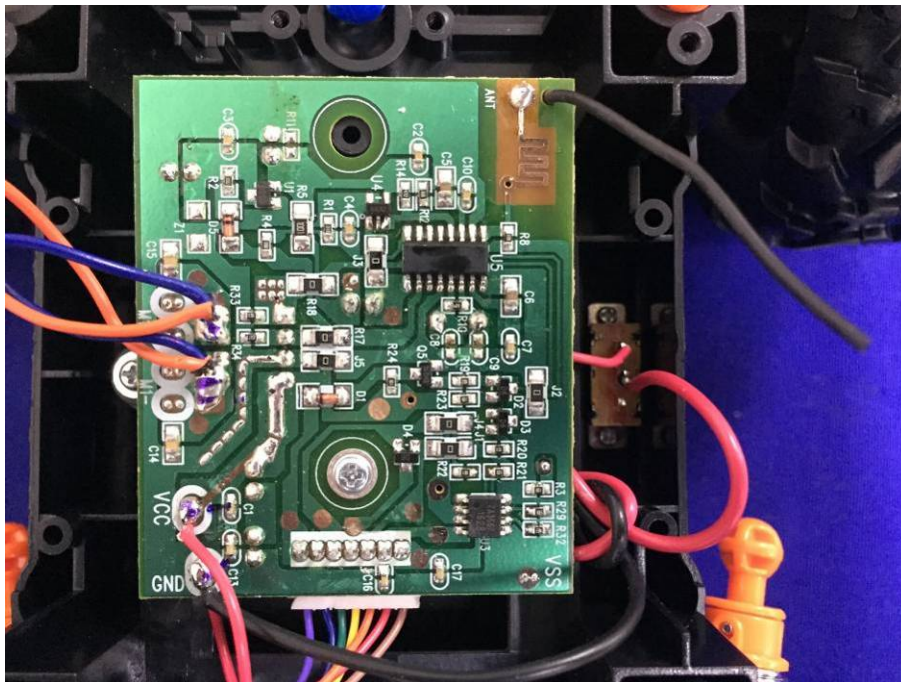
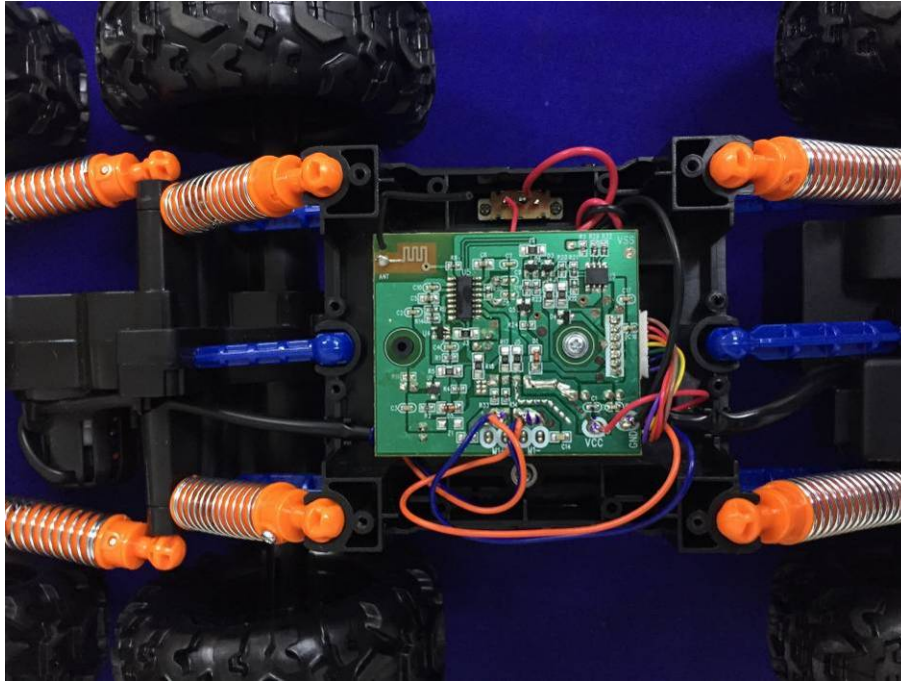
10.2 INTERNAL PHOTOS (Control Unit)

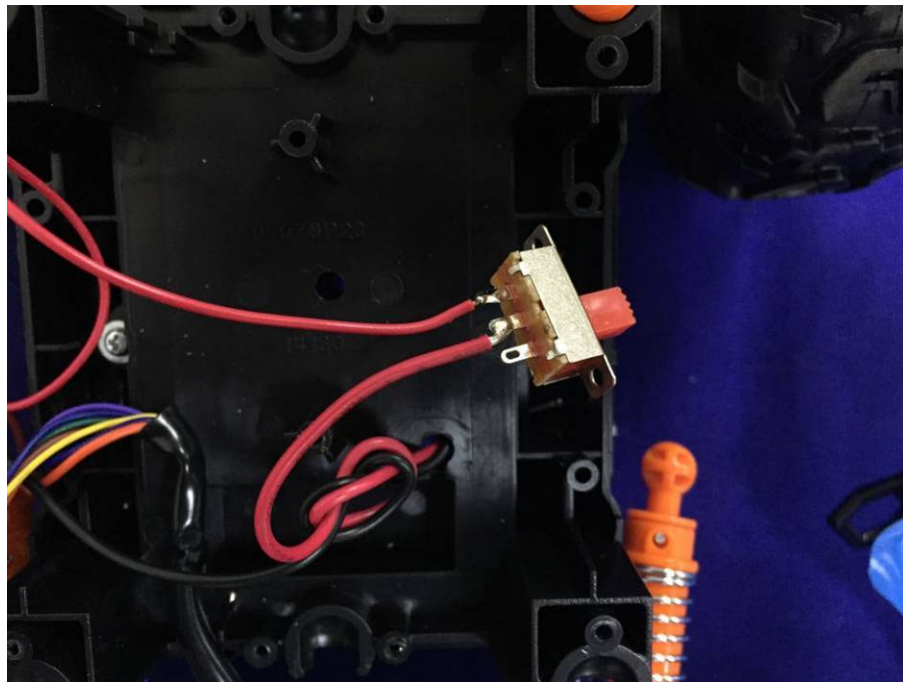
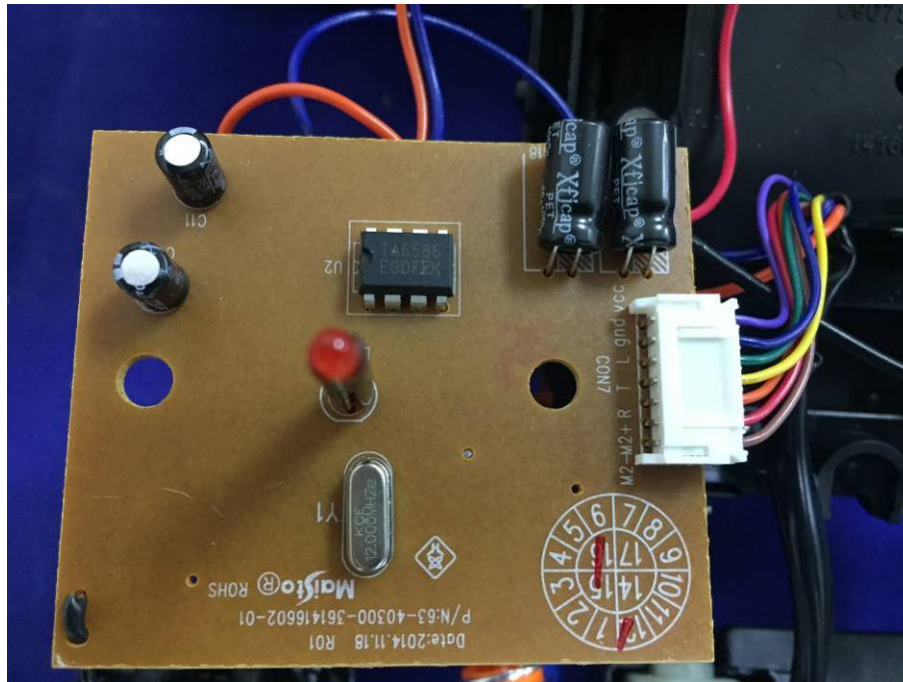


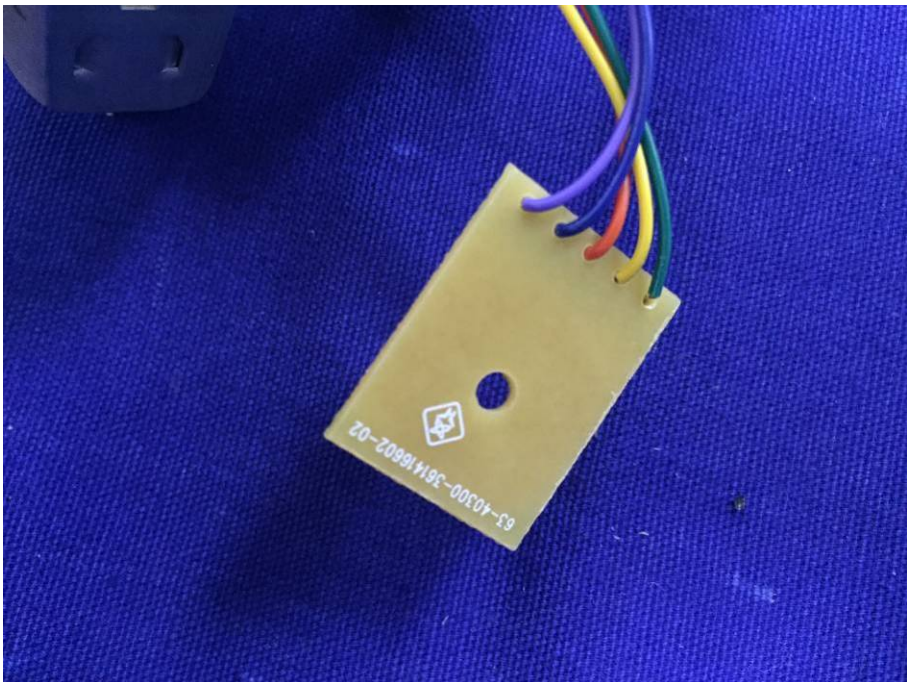
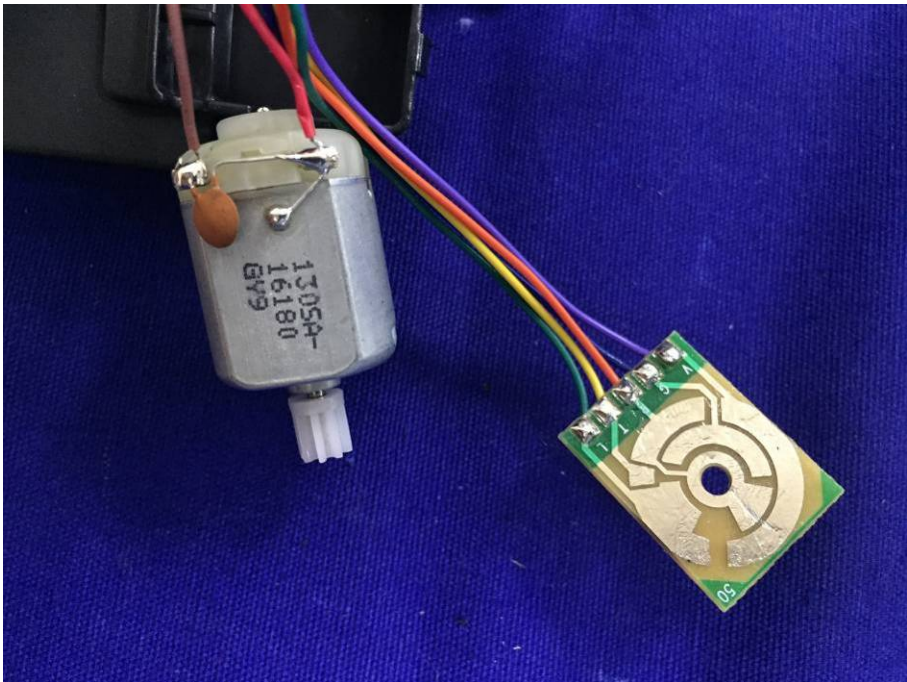


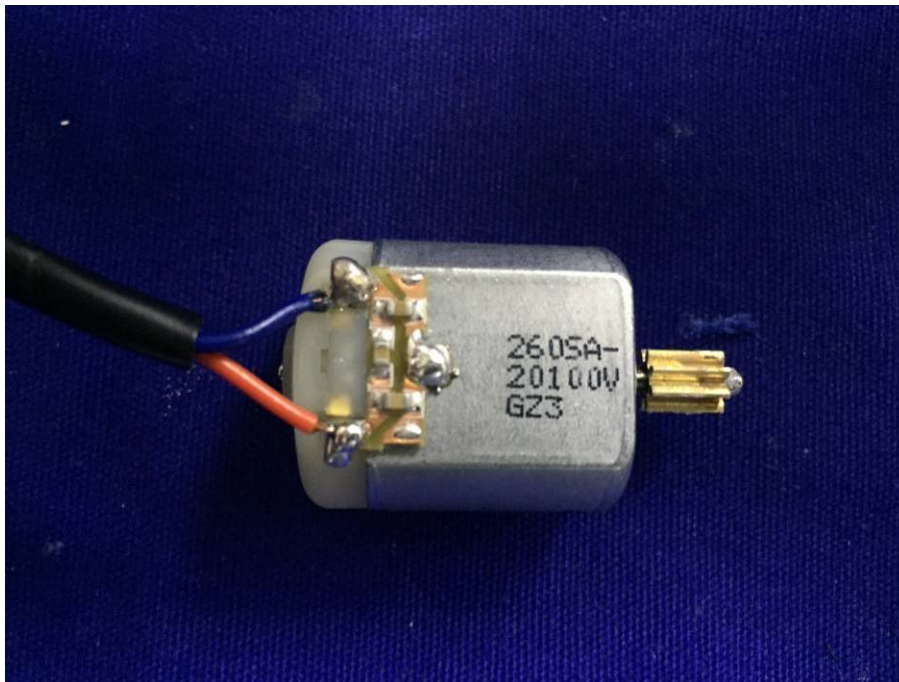
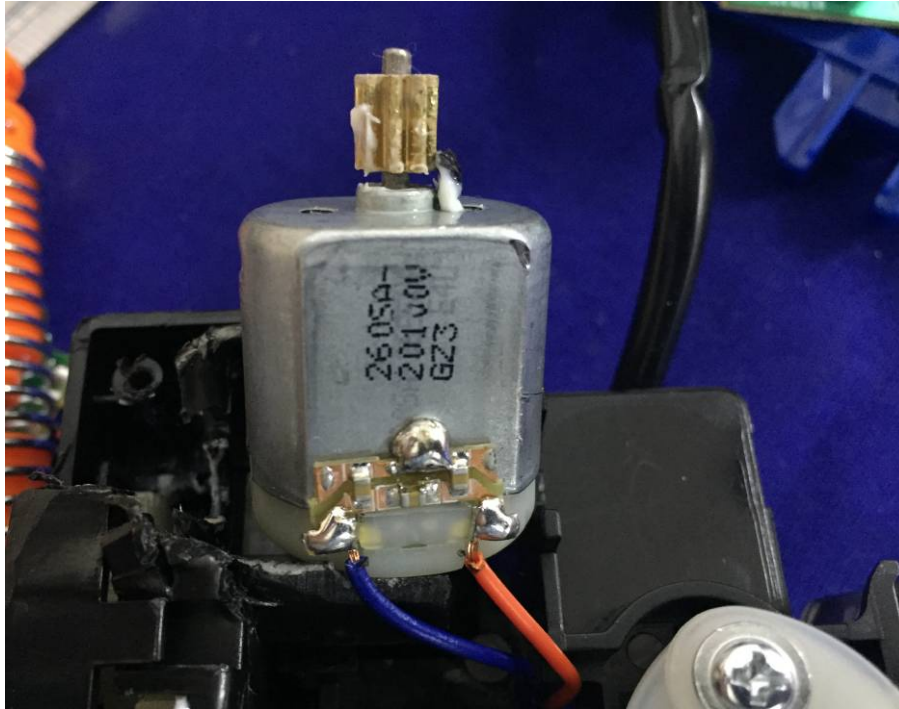
10.3 INTERNAL PHOTOS (RECEIVE UNIT)











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