



TEST REPORT

Product Name: Lithium battery electric screwdriver
Trademark: creationspace
Model Number: ZPJ1802A
Prepared For: SUZHOU CREATION SPACE INTELLIGENT TECHNOLOGY CO.,LTD.
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Sample Received Date: Jul. 01, 2019
Sample tested Date: Jul. 01, 2019 to Jul. 09, 2019
Issue Date: Jul. 10, 2019
Report No.: SJS20190700200F01
Test Standards 47 CFR FCC Part 15 Subpart B
Test Results PASS

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Helen Lin

Helen Lin/Manager



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(Note: N/A means not applicable)



1. VERSION

Report No.	Issue Date	Description	Approved
SJS20190700200F01	July 10, 2019	Original	Valid



2. TEST SUMMARY

The Product has been tested according to the following specifications:

Standard	Test Item	Test result
FCC 15.107	Conducted Emission	Pass
FCC 15.109	Radiated Emission	Pass



3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	3.20
Radiated Emission(30MHz~1GHz)	4.80
Radiated Emission(1GHz~6GHz)	4.90



4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Ratings: DC 5V

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Specification	Note
1	--	--	Applicant	---	Shielded	With a ferrite ring in mid Detachable
2	--	--	SJS	--	Unshielded	--

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

No	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1.	---	---	---	---	---	---

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Test item	Test Mode	Test Voltage
Radiated mission(30MHz-1GHz) Class B	Working	DC 5 V*
All test mode were tested and passed, Radiated Emissions shows (*) is the worst case mode which were recorded in this report.		



5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at SJS 3rd Floor, Building A, Hongfenghua Creative Park, Huangtian Community, Hangcheng Street, Baoan District, Shenzhen, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

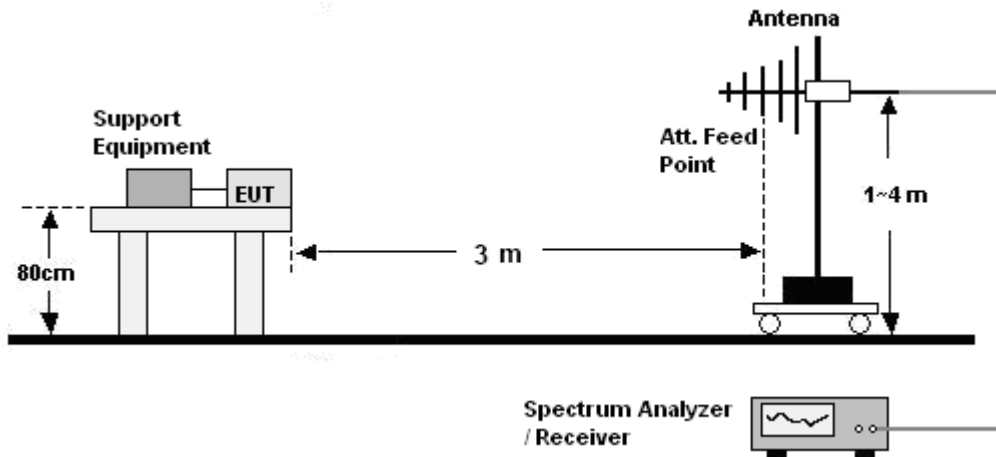
5.2 Test Instrument Used

Radiated emissions Test (966 chamber)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	Aug. 25, 2018	Aug. 24, 2019
Receiver	R&S	ESR	101154	Aug. 14, 2018	Aug. 13, 2019
Amplifier	Schwarzbeck	BBV9718	9718-309	Aug. 14, 2018	Aug. 13, 2019
Amplifier	Schwarzbeck	BBV9744	9744-0037	Aug. 14, 2018	Aug. 13, 2019
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	VULB9163-942	Aug. 13, 2018	Aug. 12, 2019
Horn Antenna	SCHWARZBECK	BBHA9120 D	1201	Aug. 16, 2018	Aug. 15, 2019

6. RADIATION EMISSION TEST

6.1 Block Diagram Of Test Setup

30MHz ~ 1GHz:



6.2 Limit

Limits for Class B devices

Frequency (MHz)	limits at 3m dB(μ V/m)		
	QP Detector	PK Detector	AV Detector
30-88	40.0	--	--
88-216	43.5	--	--
216-960	46.0	--	--
960 to 1000	54.0	--	--
Above 1000	--	74.0	54.0

Note: The lower limit shall apply at the transition frequencies.



6.3 Test Procedure

30MHz ~ 1GHz:

- a. The Product was placed on the nonconductive turntable 0.8 m above the ground at a chamber.
- b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

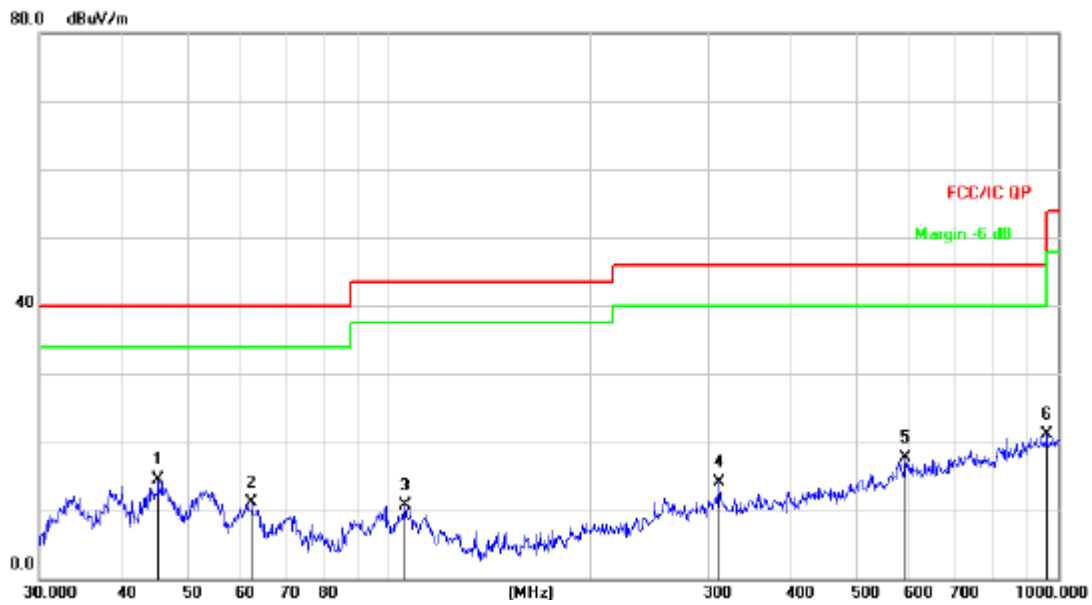
Remark:

The highest frequency of the internal sources of the EUT is less than 108 MHz, so the measurement shall only be made up to 1 GHz.



6.4 Test Result

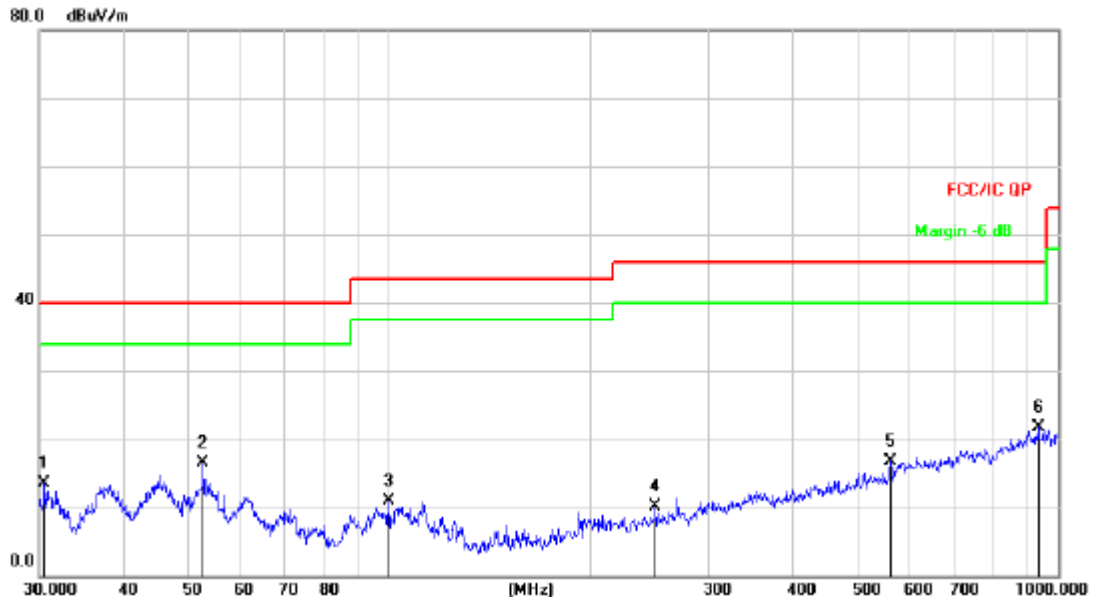
Temperature:	25 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Horizontal
Test Voltage :	DC 5 V	Test Mode:	Working



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1		45.2166	28.47	-14.03	14.44	40.00	-25.56	QP		
2		62.4314	27.13	-16.08	11.05	40.00	-28.95	QP		
3		105.6415	26.31	-15.66	10.65	43.50	-32.85	QP		
4		311.0867	27.60	-13.54	14.06	46.00	-31.94	QP		
5		590.9737	24.55	-6.85	17.70	46.00	-28.30	QP		
6	*	958.7943	23.09	-1.96	21.13	46.00	-24.87	QP		



Temperature:	25 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Vertical
Test Voltage :	DC 5 V	Test Mode:	Working



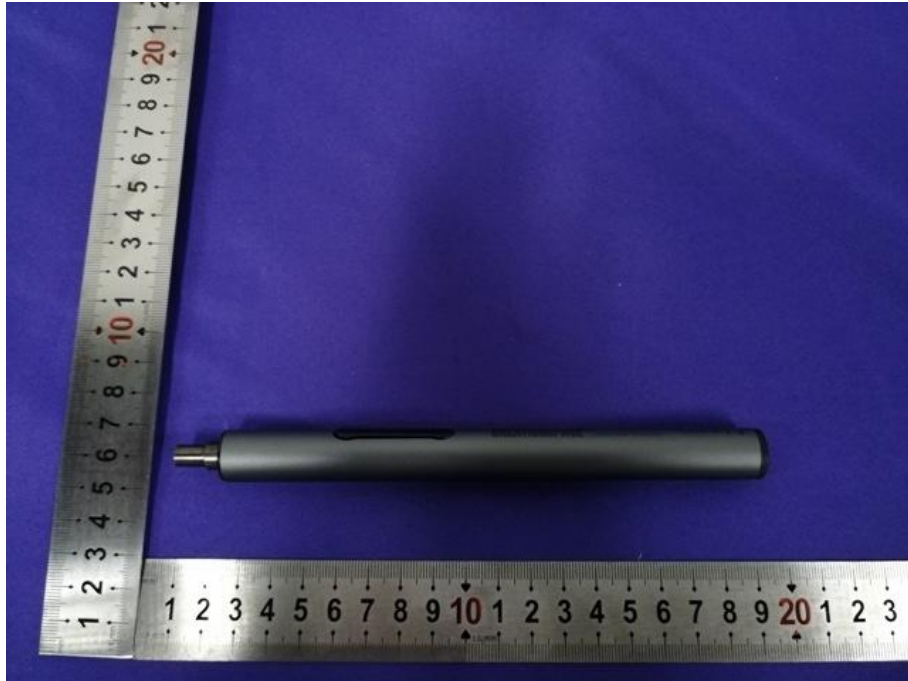
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		30.5306	30.25	-16.81	13.44	40.00	-26.56	QP			
2	*	52.7600	30.98	-14.40	16.58	40.00	-23.42	QP			
3		99.8777	26.41	-15.56	10.85	43.50	-32.65	QP			
4		250.3012	25.20	-15.10	10.10	46.00	-35.90	QP			
5		560.6928	24.60	-7.85	16.75	46.00	-29.25	QP			
6		932.2715	23.88	-2.19	21.69	46.00	-24.31	QP			

Remark:

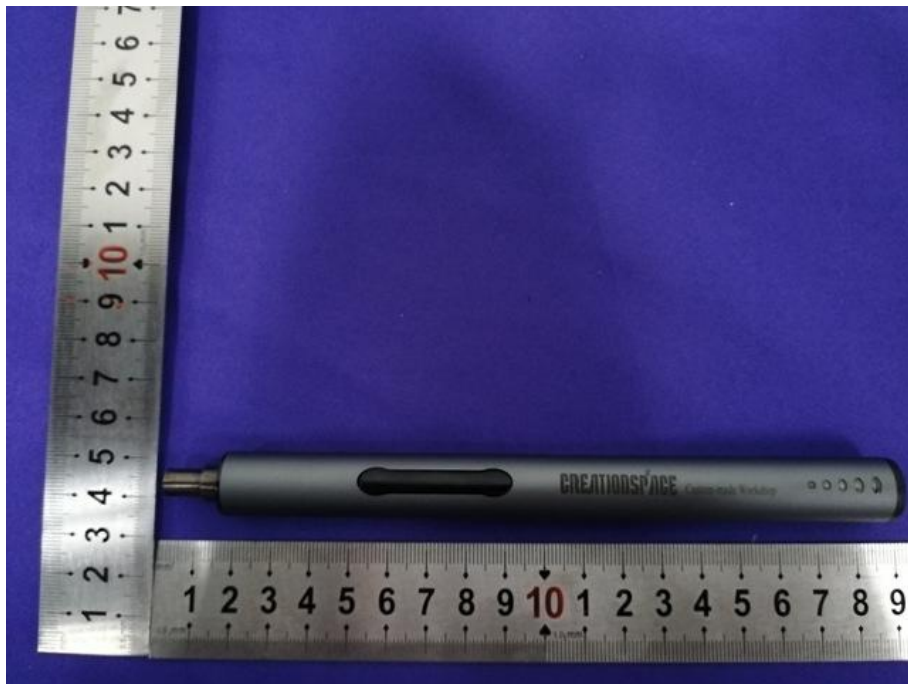
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

7. EUT PHOTOGRAPHS

EUT Photo 1



EUT Photo 2



EUT Photo 3



EUT Photo 4



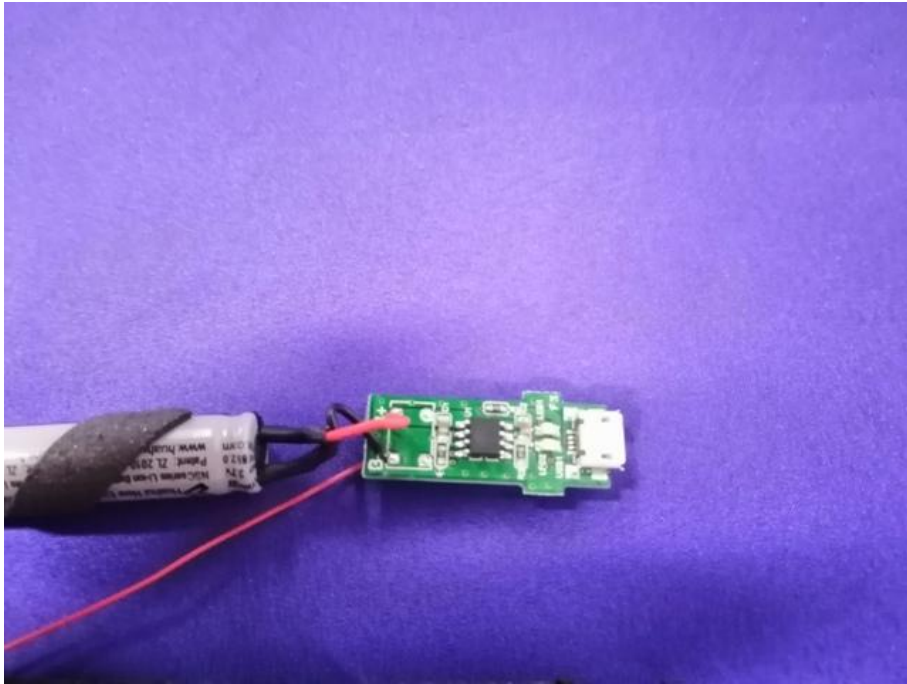
EUT Photo 5



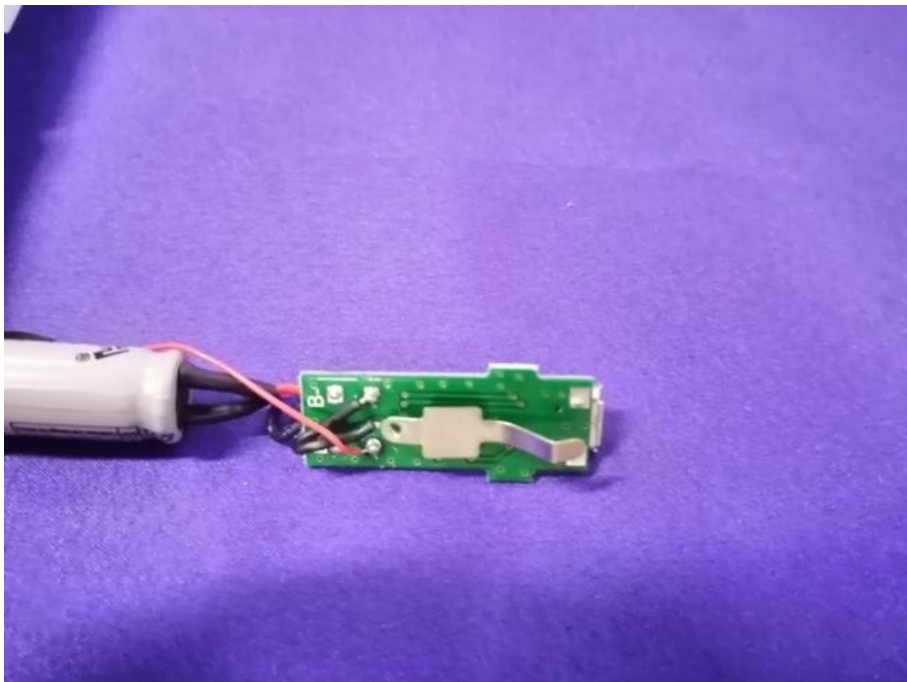
EUT Photo 6



EUT Photo 7



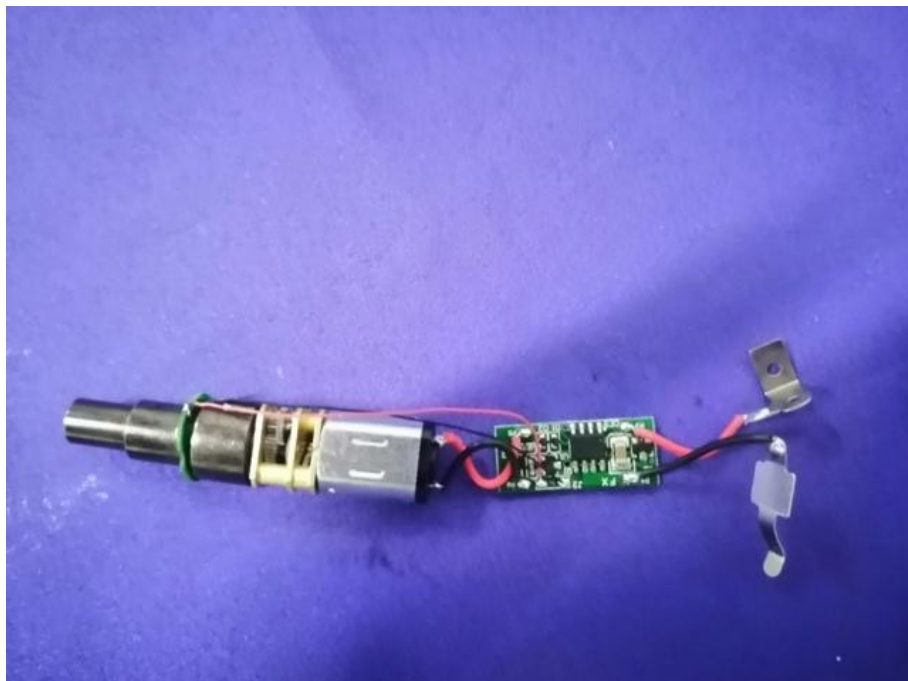
EUT Photo 8



EUT Photo 9



EUT Photo 10





8. EUT TEST SETUP PHOTOGRAPHS

Radiated emission



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