

TEST REPORT

FCC ID: 2AH3C-S01

Product: Saent

Model No.: S01

Trade mark: N/A

Report No.: TCT160414E014

Issued Date: Apr. 28, 2016

Issued for:

SAENT HOLDING LIMITED

**Room 502-503, 5th Floor, Connaught Commercial Building
185 Wanchai Road, Wanchai, Hong Kong**

Issued By:

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1. Test Certification

Product:	Saent
Model No.:	S01
Applicant:	SAENT HOLDING LIMITED
Address:	Room 502-503, 5th Floor, Connaught Commercial Building 185 Wanchai Road, Wanchai, Hong Kong
Manufacturer:	SAENT HOLDING LIMITED
Address:	Room 502-503, 5th Floor, Connaught Commercial Building 185 Wanchai Road, Wanchai, Hong Kong
Test Voltage:	DC 3.7 V, DC 5 V (Notebook Computer Input AC 120 V/ 60 Hz)
Date of Test:	Apr. 25, 2016 ~ Apr. 27, 2016
Applicable Standards:	47 CFR FCC Part 15 Subpart B: 2016 ANSI C63.4: 2014

The above equipment has been tested by Shenzhen Tongce Testing Lab and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: Derek Cai
Derek Cai

Date: Apr. 27, 2016

Check By: Joe Zhou
Joe Zhou

Date: Apr. 28, 2016

Approved By: Tomsin
Tomsin

Date: Apr. 28, 2016

2. Test Result Summary

Emission		
Test Method	Item	Result
FCC 47 CFR Part 15 Subpart B	Conducted Emission at Mains Terminals	Pass
	Radiated Emission	Pass

Note:

1. Pass: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.
5. The information of measurement uncertainty is available upon the customer's request.

3. EUT Description

Product Name:	Saent
Model No.:	S01
Additional Model No.:	N/A
Trade Mark:	N/A
Product Parameter:	DC 5V,1A
AC Line(PC):	<input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Unshielded, <input checked="" type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Length: 1.2 m
AC Line(Monitor):	<input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Unshielded, <input checked="" type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Length: 1.2 m
AC Line(Printer):	<input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Unshielded, <input checked="" type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Length: 1.2 m
USB Line (PC to EUT):	<input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Unshielded, <input checked="" type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Length: 0.8 m
USB Line (PC to Printer):	<input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Unshielded, <input checked="" type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Length: 1.0 m
USB Line (Mouse):	<input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Unshielded, <input checked="" type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Length: 1.5 m
USB Line (Keyboard):	<input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Unshielded, <input checked="" type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Length: 1.5 m
VGA Line	<input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Unshielded, <input checked="" type="checkbox"/> Detachable <input type="checkbox"/> Un-detachable <input type="checkbox"/> Not applicable <input checked="" type="checkbox"/> Length: 1.2 m

4. Test Methodology

4.1. Decision of Final Test Mode

The EUT was tested together with the thereafter additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The following test mode(s) were assessed:

Test Mode
Mode 1: Charging + Data Transmitting

The following test mode was found to produce the highest emission level.

The Worst Test Mode		
Emission	Conducted Emission	Mode 1: Charging + Data Transmitting
	Radiated Emission	

4.2. EUT System Operation

1. Set up EUT with the support equipments.
2. Make sure the EUT work normally during the test.

5. Setup of Equipment under Test

5.1. Description of Support Units

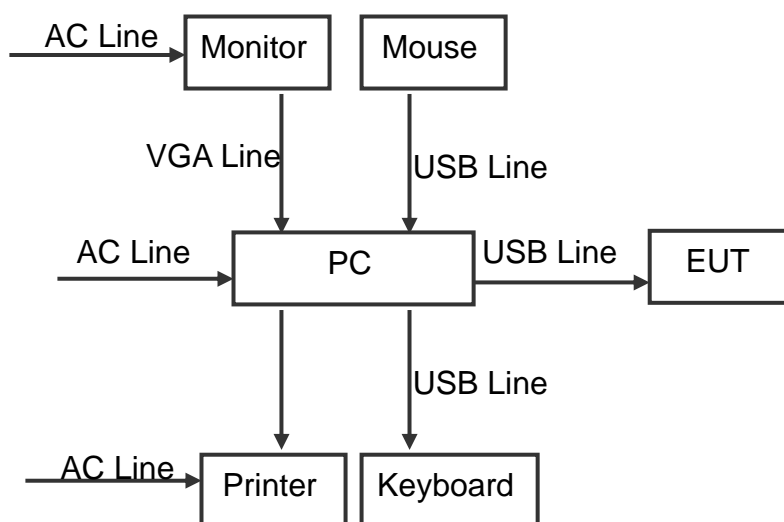
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
PC	BM6620	D1PFCG008HP	DOC	ASUS
Monitor	VX239	VX239H	DOC	ASUS
Keyboard	PK1100UE	04G104180039DP	DOC	ASUS
Printer	L11121E	FE2-2902	DOC	CANON
Mouse	MOBTUO	04G125610170DP	DOC	ASUS

Note:

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.

5.2. Configuration of System Under Test



(EUT: Saent)

6. Facilities and Accreditations

6.1. Facilities

All measurement facilities used to collect the measurement data are located at TCT Lab.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

No.	Item	MU
1.	Temperature	$\pm 0.1^{\circ}\text{C}$
2.	Humidity	$\pm 1.0 \%$
3.	Spurious Emissions, Conducted	$\pm 3.70 \text{ dB}$
4.	All Emissions, Radiated	$\pm 4.50 \text{ dB}$

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

7. Emission Test

7.1. Conducted Emission at Mains Terminals

7.1.1. Test Specification

Test Requirement:	FCC 47 CFR Part 15 Subpart B
Test Method:	ANSI C63.4: 2014
Frequency Range:	150 kHz to 30 MHz

7.1.2. Limits

Frequency (MHz)	Class A dB(uV)		Class B dB(uV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 – 56 ^a	56 – 46 ^a
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

a. Decreases with the logarithm of the frequency

7.1.3. Test Instruments

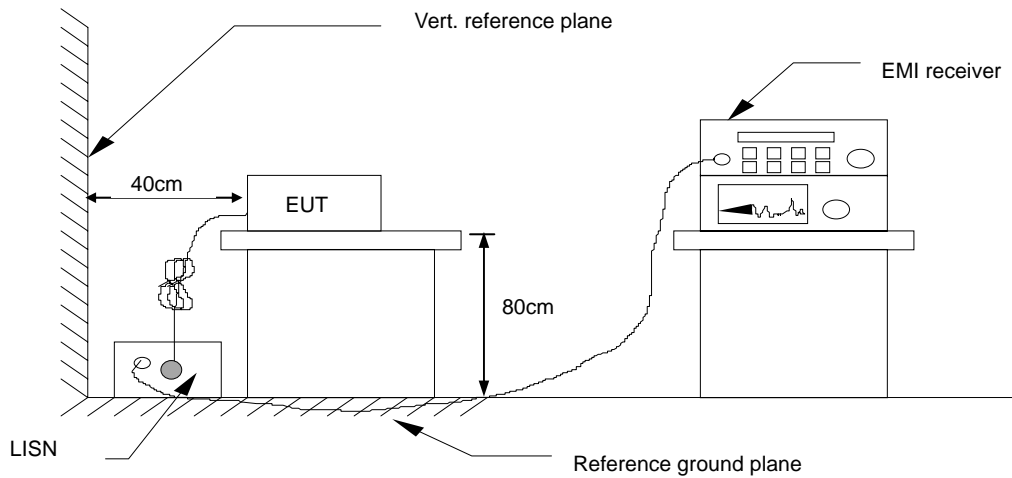
Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCS30	100139	Sep. 11, 2016
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 16, 2016

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

7.1.4. Test Method

The AMN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN

7.1.5. Block Diagram of Test Setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.1.6. Test Results

Test Environment:	Temp.: 23 °C	Humid.: 54 %	Press.: 96 kPa
Test Mode:	Mode 1		
Test Voltage:	DC 5 V (Computer Input AC 120 V/ 60 Hz)		
Test Result:	Pass		

Note:

L1 = Live Line / N = Neutral Line

“---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

Freq. = Emission frequency in MHz

Reading level dB(μV) = Receiver reading

Corr. Factor (dB) = Attenuator factor + Cable loss

Level dB(μV) = Reading level dB(μV) + Corr. Factor (dB)

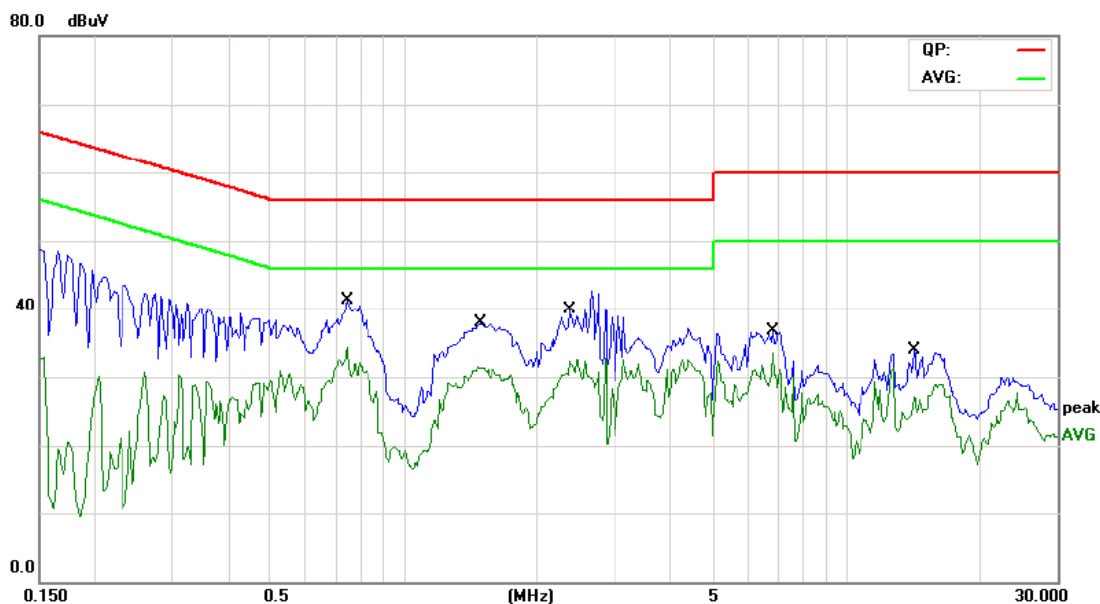
Limit dB(μV) = Limit stated in standard

Margin (dB) = Level dB(μV) – Limits dB(μV)

Q.P. =Quasi-Peak

AVG=Average

Please refer to following diagram for individual



Site Chamber #2

Phase: L1

Temperature: 23 (C)

Limit: FCC Part 15B Class B Conduction(QP)

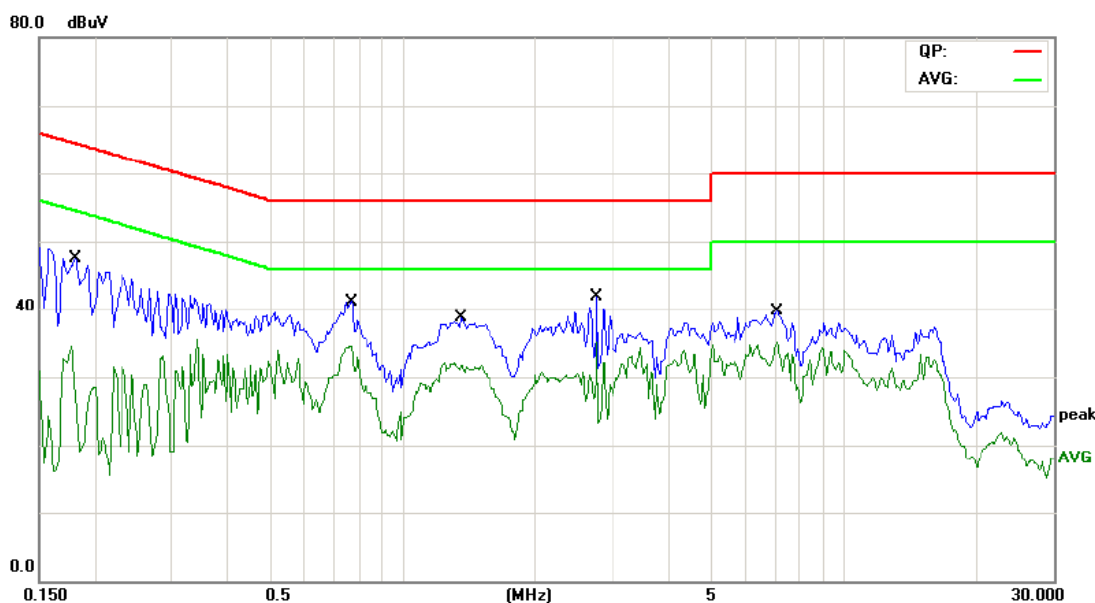
Power:

Humidity: 54 %

Mode: Charging + Data Transmtting

Note: DC 5V(Computer Input AC 120V/60Hz)

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.7438	25.26	11.21	36.47	56.00	-19.53	QP	
2		0.7438	18.35	11.21	29.56	46.00	-16.44	AVG	
3		1.4898	23.33	11.42	34.75	56.00	-21.25	QP	
4		1.4898	18.77	11.42	30.19	46.00	-15.81	AVG	
5		2.3648	24.03	11.55	35.58	56.00	-20.42	QP	
6	*	2.3648	18.96	11.55	30.51	46.00	-15.49	AVG	
7		6.8359	21.04	10.89	31.93	60.00	-28.07	QP	
8		6.8359	14.02	10.89	24.91	50.00	-25.09	AVG	
9		14.2695	17.54	11.55	29.09	60.00	-30.91	QP	
10		14.2695	11.27	11.55	22.82	50.00	-27.18	AVG	



Site Chamber #2

Phase: **N**

Temperature: 23 (C)

Limit: FCC Part 15B Class B Conduction(QP)

Power:

Humidity: 54 %

Mode: Charging + Data Transmtting

Note: DC 5V(Computer Input AC 120V/60Hz)

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1812	31.41	11.48	42.89	64.43	-21.54	QP	
2		0.1812	15.98	11.48	27.46	54.43	-26.97	AVG	
3		0.7632	25.96	11.21	37.17	56.00	-18.83	QP	
4		0.7632	21.89	11.21	33.10	46.00	-12.90	AVG	
5		1.3569	23.38	11.35	34.73	56.00	-21.27	QP	
6		1.3569	19.14	11.35	30.49	46.00	-15.51	AVG	
7		2.7554	28.71	11.41	40.12	56.00	-15.88	QP	
8	*	2.7554	22.33	11.41	33.74	46.00	-12.26	AVG	
9		7.0859	25.80	10.92	36.72	60.00	-23.28	QP	
10		7.0859	19.57	10.92	30.49	50.00	-19.51	AVG	

7.2. Radiated Emission

7.2.1. Test Specification

Test Requirement:	FCC 47 CFR Part 15 Subpart B
Test Method:	ANSI C63.4: 2014
Frequency Range:	30 MHz to 1000 MHz
Measurement Distance:	3 m
Antenna Polarization:	Horizontal & Vertical

7.2.2. Limits

Frequency (MHz)	Class A (at 3m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	49.0	40.0
88 ~ 216	53.5	43.5
216 ~ 960	56.4	46.0
960 ~ 1000	59.5	54.0

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level $\text{dB}(\mu\text{V/m}) = 20 \log \text{Emission level } (\mu\text{V/m})$.

7.2.3. Test Instruments

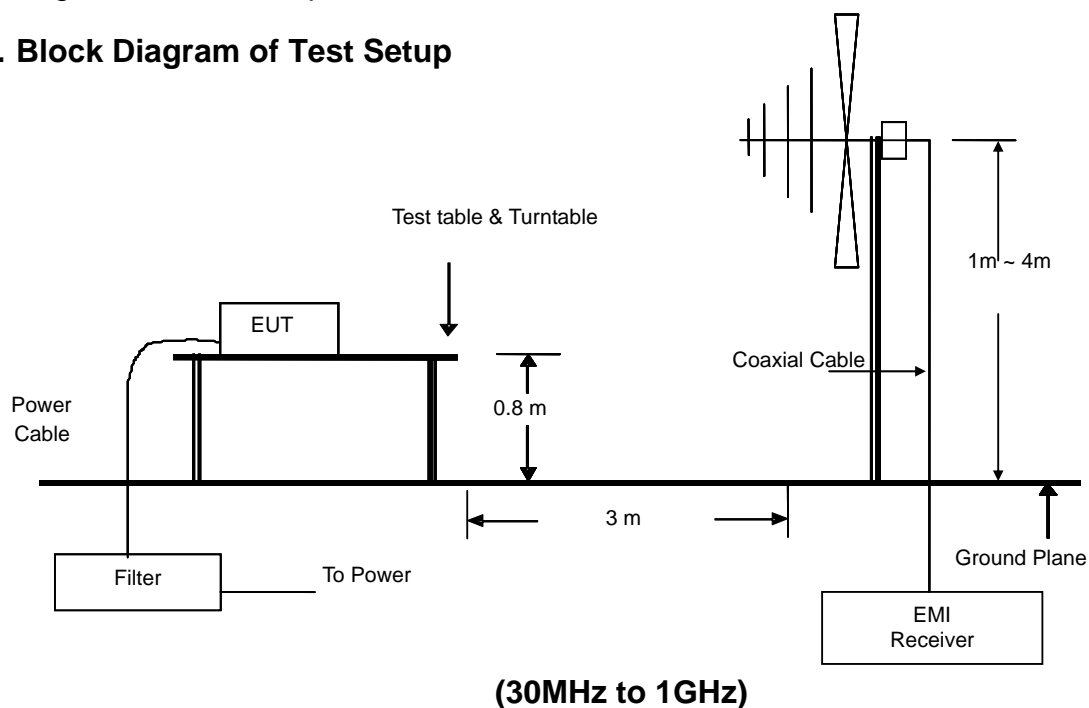
Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESVD	100008	Sep. 11, 2016
Spectrum Analyzer	R&S	FSEM	848597-001	Sep. 11, 2016
Amplifier	HP	8447D	2727A05017	Sep. 11, 2016
Amplifier	EM	EM30265	07032613	Sep. 11, 2016
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 13, 2016
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 13, 2016

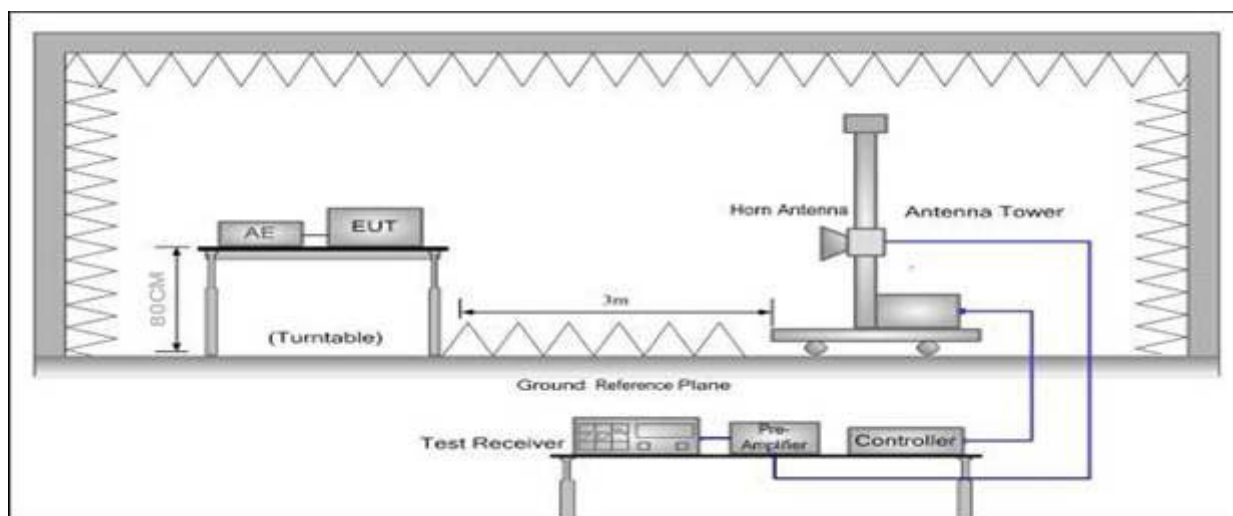
Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

7.2.4. Test Method

Measurements were made in a 3-meter semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3 meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (quasi-peak) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable. Block Diagram of Test Setup.

7.2.5. Block Diagram of Test Setup





(Above 1GHz)

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration

7.2.6. Test Results

Test Environment:	Temp.: 25 °C	Humid.: 54 %	Press.: 96 kPa
Test Mode:	Mode 1		
Test Voltage:	DC 5 V (Computer Input AC 120 V/ 60 Hz)		
Test Result:	Pass		

Note:

Freq. = Emission frequency in MHz

Reading level dB(μV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement dB(μV/m) = Reading level dB(μV) + Corr. Factor (dB)

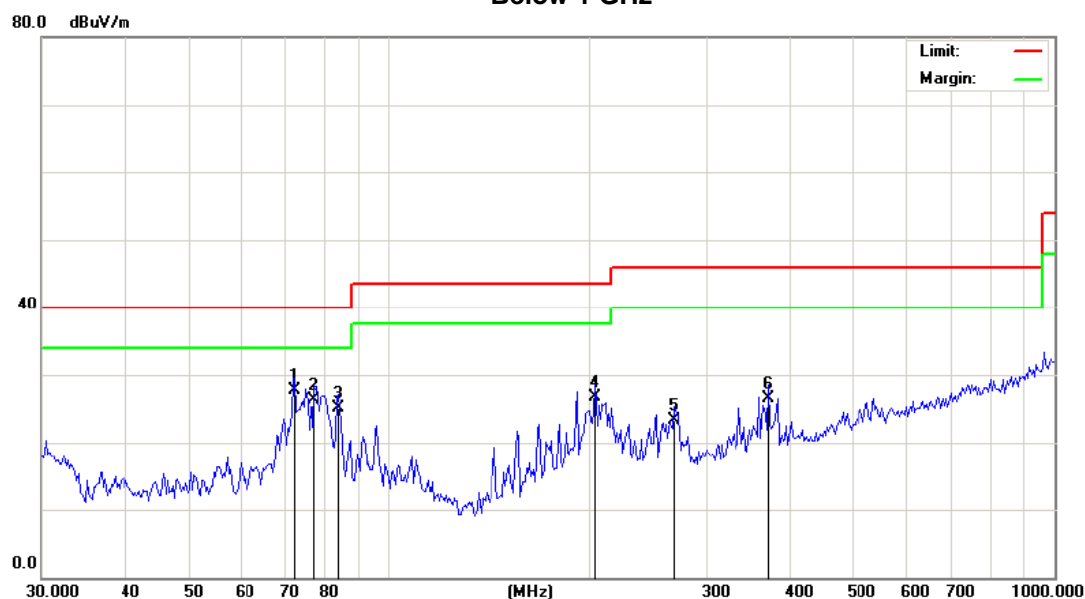
Limit dB(μV/m) = Limit stated in standard

Margin (dB) = Measurement dB(μV/m) – Limits dB(μV/m)

Q.P. =Quasi-Peak

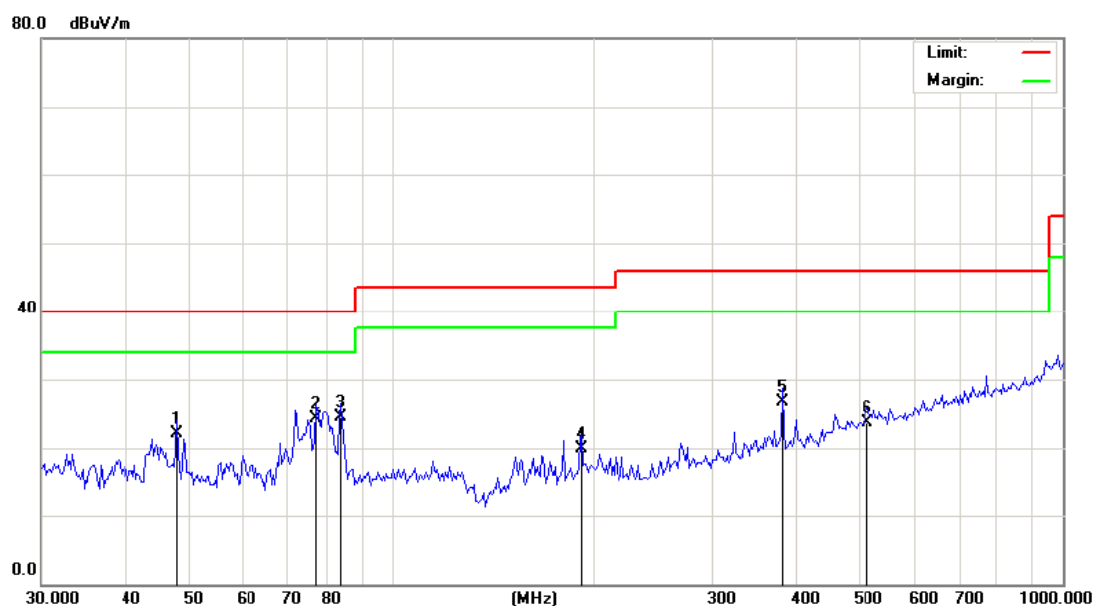
Please refer to following diagram for individual

Below 1 GHz



Site: Polarization: **Horizontal** Temperature: 25
 Limit: FCC Part 15B Class B RE_3 m Power: Humidity: 54 %
 Mode: Charging + Data Transmitting
 Note: DC 5V (Computer Input AC 120V/60Hz)

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	72.0841	44.10	-16.46	27.64	40.00	-12.36	QP	0	
2		77.1128	42.70	-16.39	26.31	40.00	-13.69	QP	0	
3		83.8947	40.20	-15.04	25.16	40.00	-14.84	QP	0	
4		203.8616	38.30	-11.54	26.76	43.50	-16.74	QP	0	
5		268.4852	32.60	-9.33	23.27	46.00	-22.73	QP	0	
6		371.9375	33.20	-6.77	26.43	46.00	-19.57	QP	0	



Site

Polarization: **Vertical**

Temperature: 25

Limit: FCC Part 15B Class B RE_3 m

Power:

Humidity: 54 %

Mode: Charging + Data Transmitting

Note: DC 5V (Computer Input AC 120V/60Hz)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		47.8282	34.30	-12.13	22.17	40.00	-17.83	QP	0	
2		77.1130	40.60	-16.39	24.21	40.00	-15.79	QP	0	
3	*	83.8947	39.50	-15.04	24.46	40.00	-15.54	QP	0	
4		191.6416	32.10	-12.25	19.85	43.50	-23.65	QP	0	
5		382.5363	33.30	-6.55	26.75	46.00	-19.25	QP	0	
6		512.3647	26.60	-2.84	23.76	46.00	-22.24	QP	0	

Above 1GHz



Site

Polarization: **Horizontal**

Temperature: 25

Limit: FCC Part 15B Class B Above 1GHz RE(PK)

Power:

Humidity: 54 %

Mode: Charging + Data Transmitting

Note: DC 5V (Computer Input AC 120V/60Hz)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		1213.972	38.18	0.00	38.18	74.00	-35.82	peak	0	
2		1431.997	38.39	0.00	38.39	74.00	-35.61	peak	0	
3		1795.501	41.20	0.00	41.20	74.00	-32.80	peak	0	
4		2462.718	40.50	0.00	40.50	74.00	-33.50	peak	0	
5		3843.997	44.38	0.00	44.38	74.00	-29.62	peak	0	
6	*	5291.411	50.84	0.00	50.84	74.00	-23.16	peak	0	

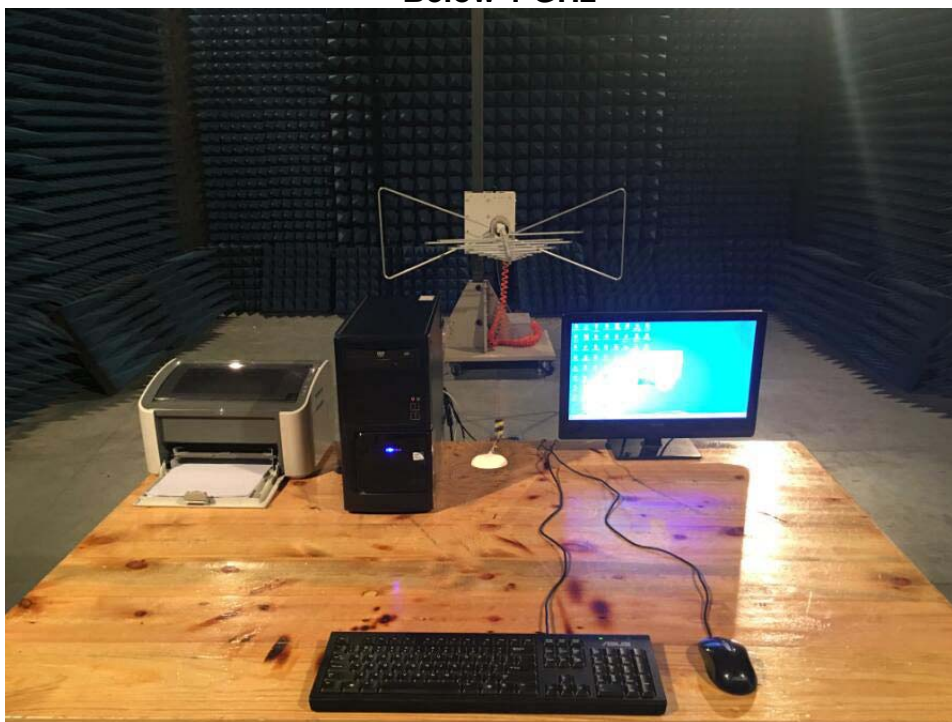


Site: Polarization: **Vertical** Temperature: 25
 Limit: FCC Part 15B Class B Above 1GHz RE(PK) Power: Humidity: 54 %
 Mode: Charging + Data Transmitting
 Note: DC 5V (Computer Input AC 120V/60Hz)

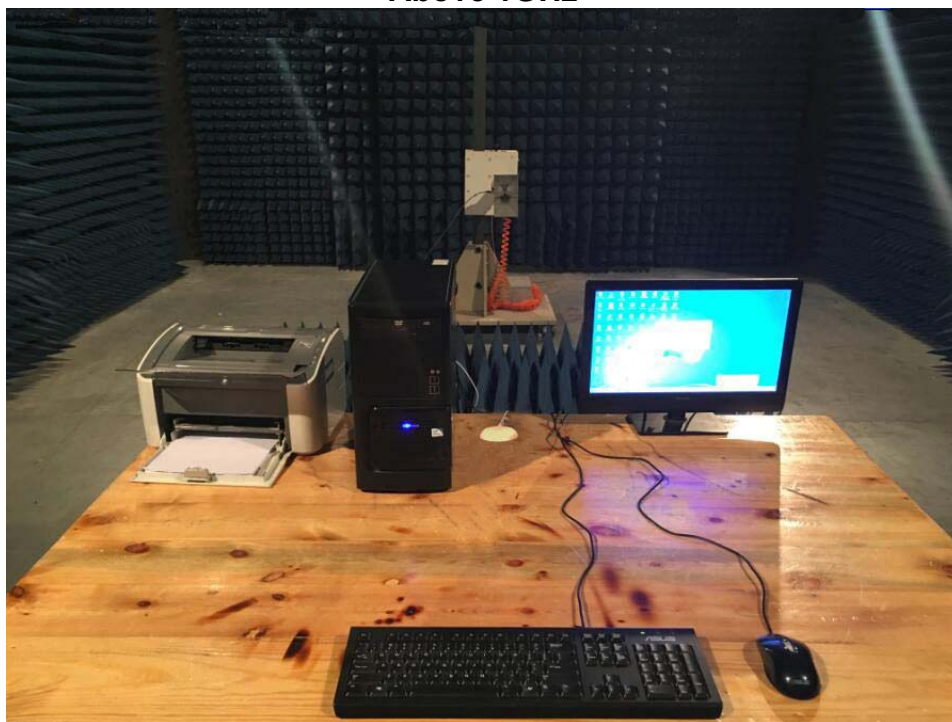
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		1318.486	38.20	0.00	38.20	74.00	-35.80	peak		0	
2		1495.048	38.31	0.00	38.31	74.00	-35.69	peak		0	
3		1732.174	39.61	0.00	39.61	74.00	-34.39	peak		0	
4		2636.597	42.05	0.00	42.05	74.00	-31.95	peak		0	
5		4485.782	47.89	0.00	47.89	74.00	-26.11	peak		0	
6	*	4717.045	48.08	0.00	48.08	74.00	-25.92	peak		0	

8. Photographs of Test Configuration

Radiated Emission Test View Below 1 GHz



Above 1GHz

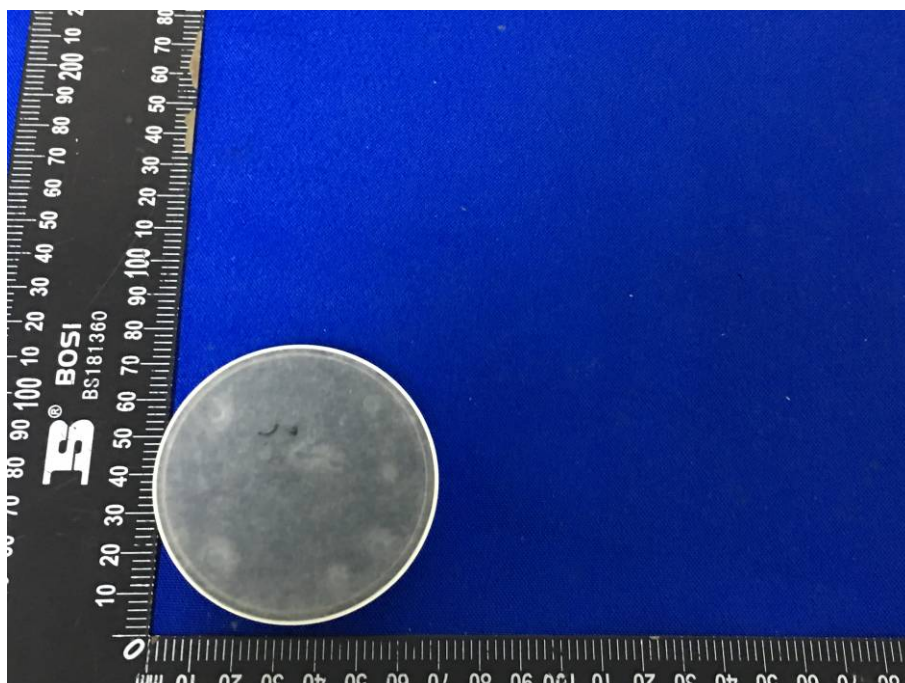


CE



9. Photographs of EUT

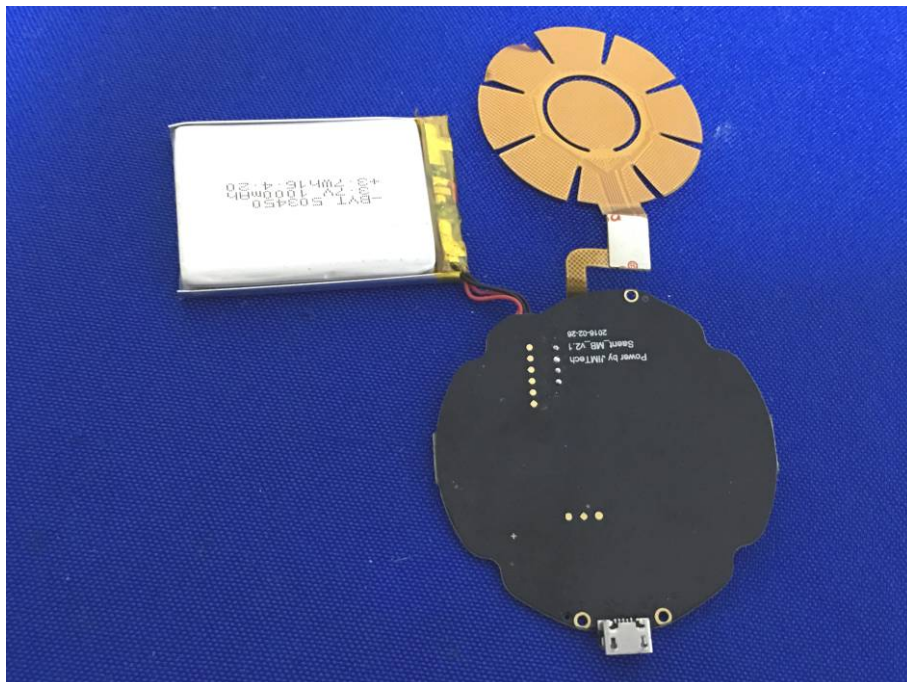
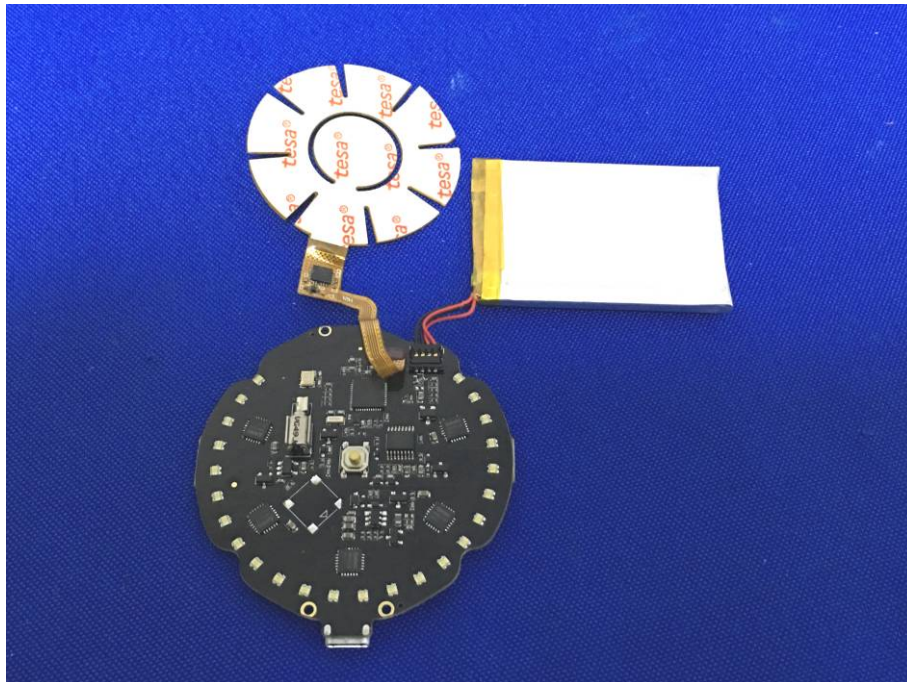
Outside View

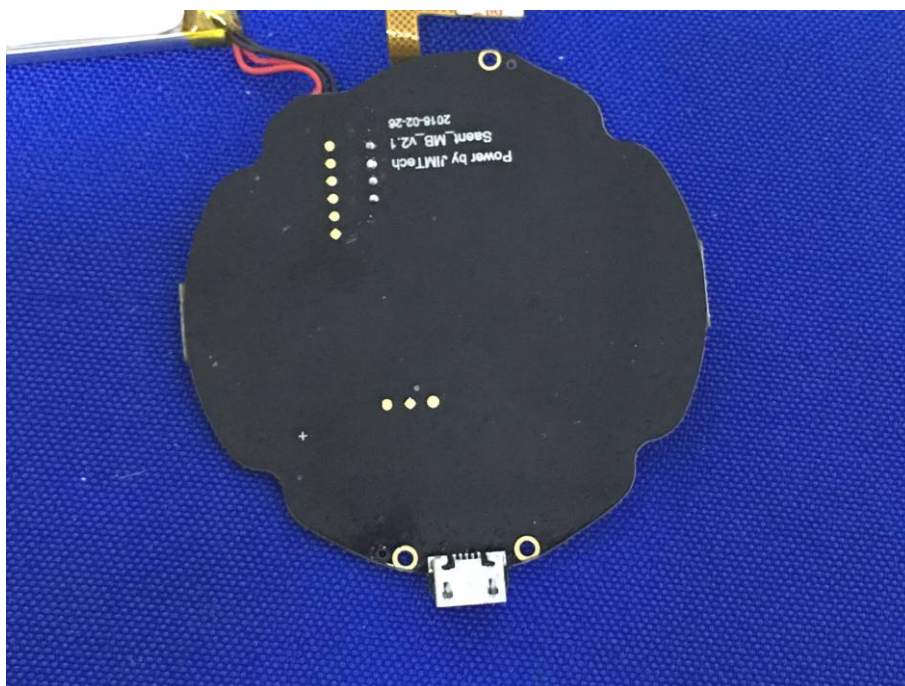
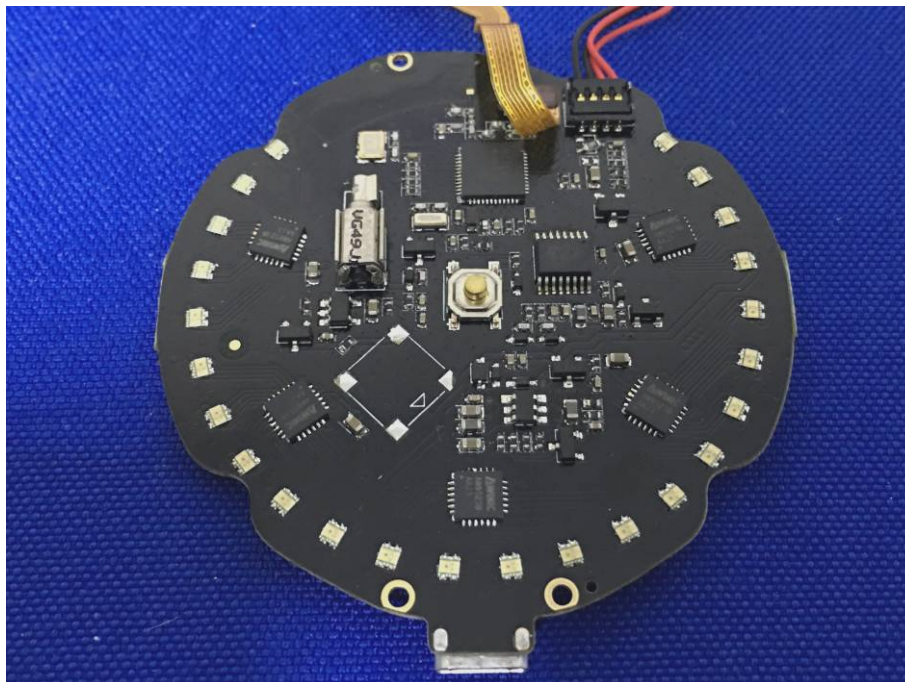




Internal Photos







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