TEST REPORT

Applicant	Flashbay Electronics
Address	Blgd b & C Xi Feng Cheng IND Zone,No.2 FuYuan Road He Ping, Village, FuYong Town, ShenZhen

Manufacturer or Supplier	Flashbay Electronics
Address	Blgd b & C Xi Feng Cheng IND Zone,No.2 FuYuan Road He Ping, Village, FuYong Town, ShenZhen
Product	Rex Power Bank
Brand Name	N/A
Model	Rex
Additional Model & Model Difference	Encore, Journey, Tour, Card, Core, Lux, Maple, Element, Foto; See items 2.1
Date of tests	Aug. 21, 2017 ~ Sep. 07, 2017

The submitted sample of the above equipment has been tested for according to the requirements of the following standards:

☒ **VCCI V-3:2015 Class B**
☒ **VCCI V-4:2012 Class B**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Ryan Lu Project Engineer / EMC Department	Approved by Madison Luo Supervisor / EMC Department
	Date: Sep. 15, 2017

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
V170821N001	Original release	Sep. 15, 2017

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1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD			
Standard	**Test Item**	**Result**	**Remark**
VCCI V-3:2015 Class B	Conducted test	PASS	Meets limit mninimum passing margin is -32.11 dB at 0.43350 MHz
	Radiated emission test(30MHz ~ 1GHz)	PASS	Meets limits minimum passing margin is -3.10 dB at 200.024 MHz

1.1 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:

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz ~ 30MHz	+/- 2.70 dB
Radiated emissions	30 MHz ~ 1GHz	+ /- 4.03 dB

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Rex Power Bank
MODEL NO.	Rex
ADDITIONAL MODELS	Encore , Journey, Tour, Card, Core, Lux, Maple, Element, Foto
POWER SUPPLY	DC 3.6V from battery or DC 5V from USB
DATA CABLE SUPPLIED	USB Line: Unshielded, Detachable 0.3m
THE HIGHEST OPERATING FREQUENCY	Below 108MHz

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: 170821N001) for detailed product photo.
4. Additional models Encore , Journey, Tour, Card, Core, Lux, Maple, Element, Foto are identical with the test model Rex except the model name for trading purpose.

2.2 DESCRIPTION OF TEST MODES

The EUT were tested under the following modes, the final worst mode was marked in boldface and recorded in this report.

CONDUCTED EMISSION TEST:

Description of Test Mode	Test Voltage
Charging	**DC 5V from USB**
Discharging + Charging	DC 5V from USB and DC 3.6V from battery
Discharging + Charging + Light ON	DC 5V from USB and DC 3.6V from battery

RADIATED EMISSION TEST:

Description of Test Mode	Test Voltage
Charging	**DC 5V from USB**
Discharging + Charging	DC 5V from USB and DC 3.6V from battery
Discharging	DC 3.6V from battery
Charging + Light ON	DC 5V from USB

2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an dependent 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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Adapter	Apple	A1299	N/A	N/A
2	Mobile Phone	SAMSUNG	GT-S7572	R21D85CCB7N	N/A
3	Adapter	Lenovo	C-P30	N/A	N/A

NO.	DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	N/A
3	N/A

3 EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 – 0.5	79	66	66 – 56	56 – 46
0.50 – 5.0	73	60	56	46
5.0 – 30.0	73	60	60	50

Note: (1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Apr. 05,17	Apr. 04,18
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Mar. 06,17	Mar. 05,18
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Apr. 05,17	Apr. 04,18
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jan. 04,17	Jan. 03,18
Test software	ADT	ADT_Cond _V7.3.7	N/A	N/A	N/A

NOTE:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in shielding room 553.
3. The VCCI Site Registration No. is C4543.

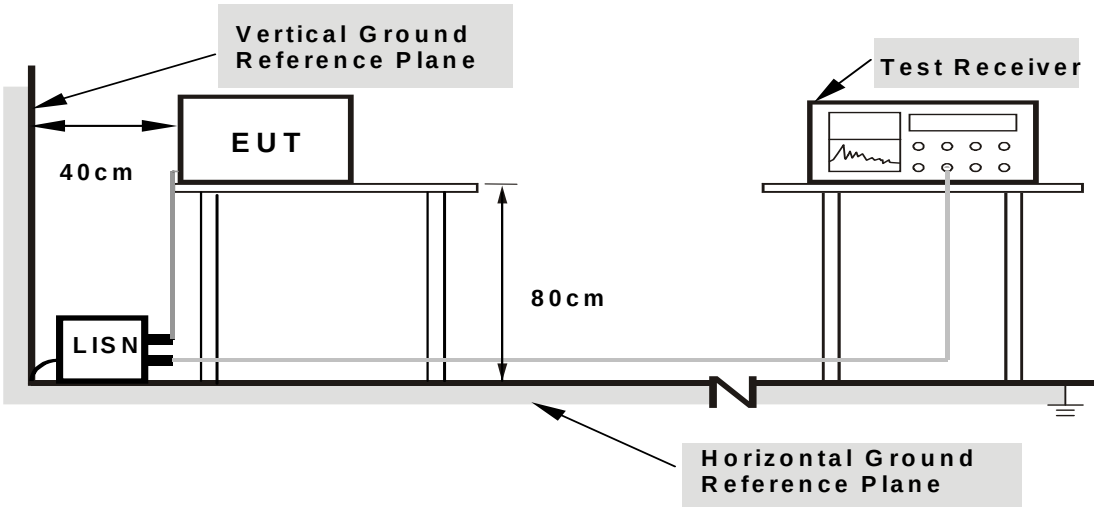
3.1.3 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20dB) were not recorded.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.

3.1.6 EUT OPERATING CONDITIONS

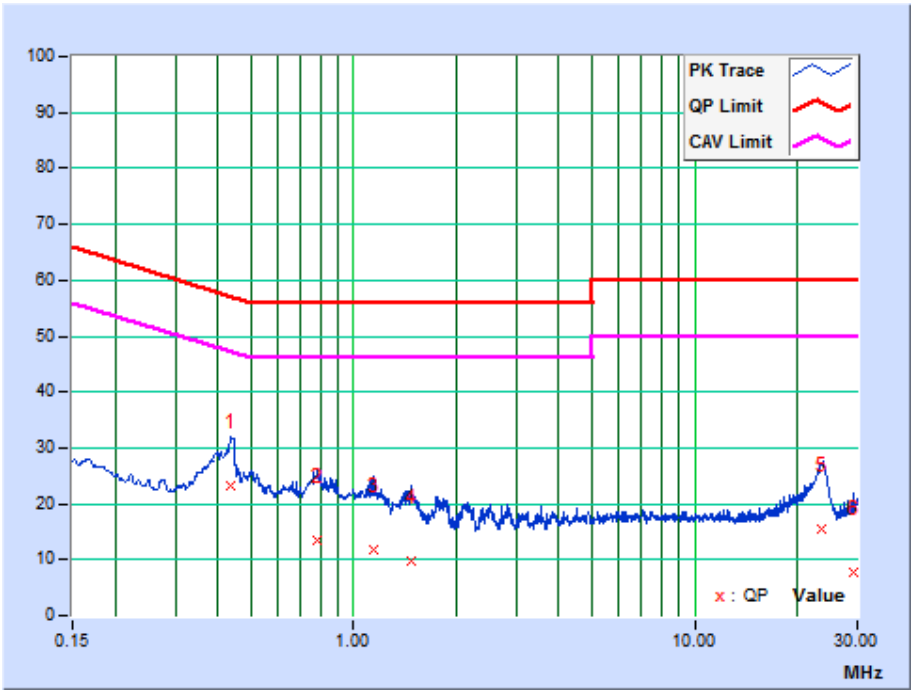
a. Turned on the power of EUT.
b. EUT was operated according to the type described in manufacturer's specifications or the User's Manual.

3.1.7 TEST RESULTS

TEST MODE	Charging+Discharging+Light ON	**6DB BANDWIDTH**	9 kHz
TEST VOLTAGE	DC 5V from USB and DC 3.6V from battery	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25 deg. C, 56% RH	**TESTED BY**	Tank

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.43575	10.23	12.99	-2.76	23.22	7.47	57.14	47.14	-33.93	-39.68
2	0.78460	10.23	3.16	-6.24	13.39	3.99	56.00	46.00	-42.61	-42.01
3	1.14225	10.22	1.58	-6.53	11.80	3.69	56.00	46.00	-44.20	-42.31
4	1.48200	10.22	-0.57	-6.70	9.65	3.52	56.00	46.00	-46.35	-42.48
5	23.46225	10.28	5.34	-4.08	15.62	6.20	60.00	50.00	-44.38	-43.80
6	29.07825	10.32	-2.71	-4.47	7.61	5.85	60.00	50.00	-52.39	-44.15

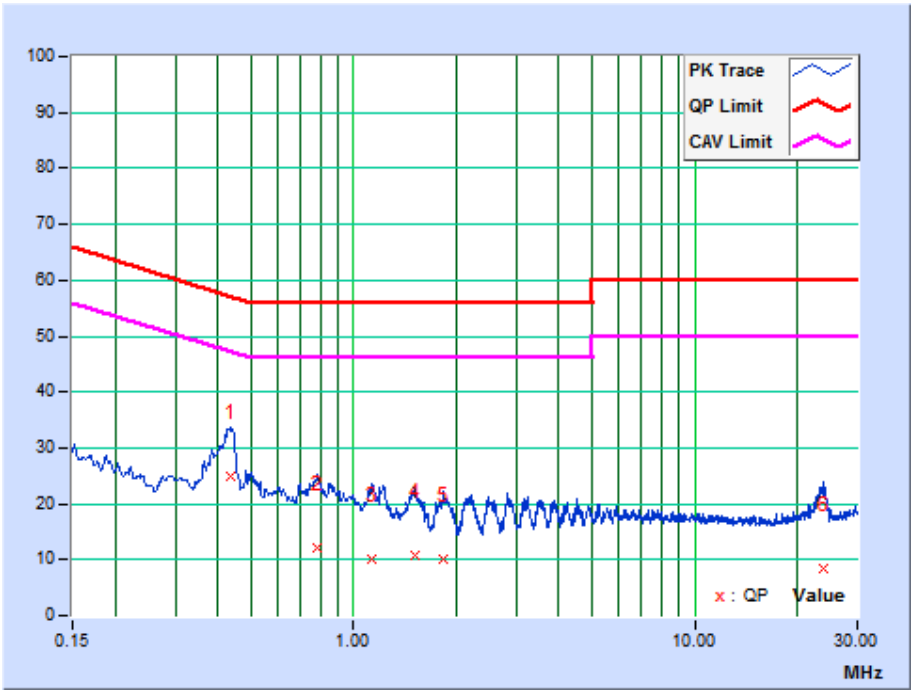
REMARKS: The emission levels of other frequencies were very low against the limit.



TEST MODE	Charging+Dischaeging+Light ON	**6DB BANDWIDTH**	9 kHz
TEST VOLTAGE	DC 5V from USB and DC 3.6V from battery	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	25 deg. C, 56% RH	**TESTED BY**	Tank

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.43350**	**10.03**	**15.05**	**-0.25**	**25.08**	**9.78**	**57.19**	**47.19**	**-32.11**	**-37.41**
2	0.78253	10.02	2.12	-6.24	12.14	3.78	56.00	46.00	-43.86	-42.22
3	1.12875	10.02	0.16	-6.44	10.18	3.58	56.00	46.00	-45.82	-42.42
4	1.50618	10.01	0.72	-6.08	10.73	3.93	56.00	46.00	-45.27	-42.07
5	1.84088	10.01	0.23	-6.15	10.24	3.86	56.00	46.00	-45.76	-42.14
6	23.91675	10.16	-1.73	-5.06	8.43	5.10	60.00	50.00	-51.57	-44.90

REMARKS: The emission levels of other frequencies were very low against the limit.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD: VCCI V-3

FOR FREQUENCY BELOW 1000 MHz

FREQUENCY (MHz)	Class A (at 10m) Quasi-Peak (dBuV/m)	Class B (at 10m) Quasi-Peak (dBuV/m)
30 – 230	40	30
230 – 1000	47	37

FREQUENCY RANGE OF RADIATED MEASUREMENT

Highest frequency generated or used within the EUT or on which the EUT operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 108	1000
108-500	2000
500-1000	5000
Above 1000	Up to 5 times of the highest frequency or 6 GHz, whichever is less

FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (GHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
1 to 3	76	56	70	50
3 to 6	80	60	74	54

Note: (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.2.2 TEST INSTRUMENTS

Frequency range below1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU26	100005	Jun. 05,17	Jun. 04,18
EMI Test Receiver	Rohde&Schwarz	ESCI	101418	Feb. 27,17	Feb. 26,18
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-555	Nov. 13, 16	Nov. 12, 17
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-554	Dec. 17, 16	Dec. 16, 17
Preamplifier	EMCI	EMC1135	980378	Mar. 20,17	Mar. 19,18
Preamplifier	EMCI	EMC1135	980423	Mar. 20,17	Mar. 19,18
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8.8m	NSEMC006	Mar. 06,17	Mar. 05,18
Test Software	ADT	ADT_Radiated_V8.7.07	N/A	N/A	N/A

NOTES: 1. The test was performed in 10m Chamber.
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

FREQUENCY RANGE ABOVE 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	ETS-Lindgren	3117	00085519	Dec. 30, 15	Dec. 29, 17
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170242	Mar. 15,17	Mar. 14,18
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101003	Apr. 05,17	Apr. 04,18
Broadband Preamplifier	SCHWARZBECK	BBV9718	266	Mar. 21,17	Mar. 20,18
Pre-Amplifier (100MHz-26.5GHz)	EMCI	EMC 012645	980077	May 19,17	May 18,18
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,16	Nov. 03,17
Test Software	ADT	ADT_Radiated_V8.7.07	N/A	N/A	N/A

NOTES: 1. The test was performed in 10m Chamber.
2. The calibration interval of the above test instruments is 12 and 24 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The VCCI Site Registration No. is R3012 (Below 1GHz), G564 (Above 1GHz).

3.2.3 TEST PROCEDURE

<Frequency Range below 1GHz>

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier);
4. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain(dB) (if the raw value contains the amplifier).
5. Margin value = Emission level – Limit value.

<Frequency Range above 1GHz>

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna can be varied from one meter-to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. The bore sight should be used during the test above 1GHz.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test receiver/spectrum was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

NOTE:

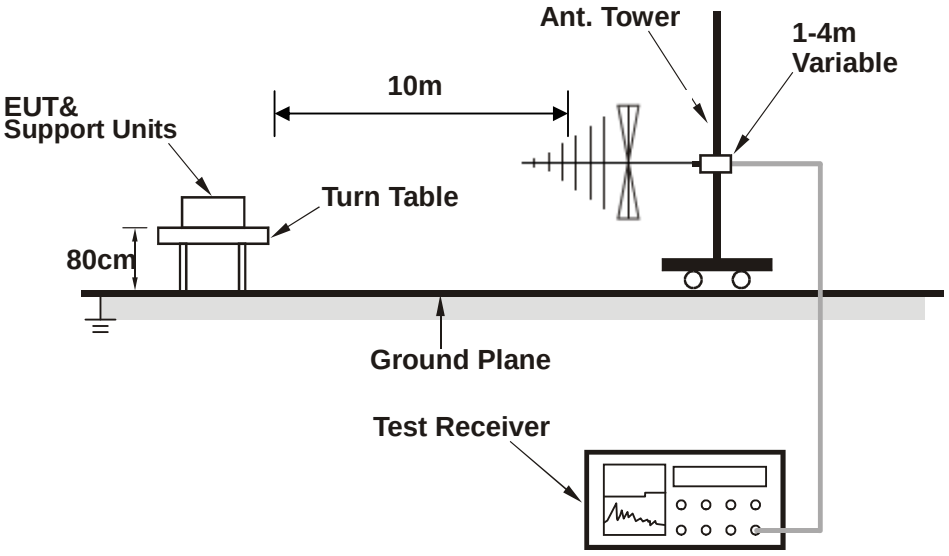
1. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
2. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the receiver antenna.
3. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
4. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier);
5. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain(dB) (if the raw value contains the amplifier).
6. Margin value = Emission level – Limit value.

3.2.4 DEVIATION FROM TEST STANDARD

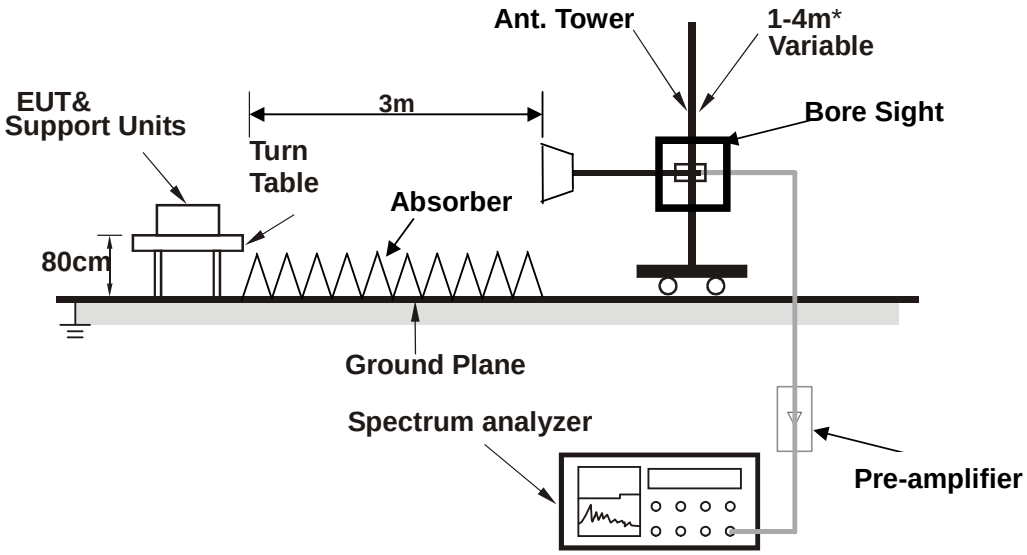
No deviation

3.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



*****depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3

3.2.6 EUT OPERATING CONDITIONS

a. Turned on the power of EUT.

b. EUT was operated according to the type described in manufacturer's specifications or the User's Manual.

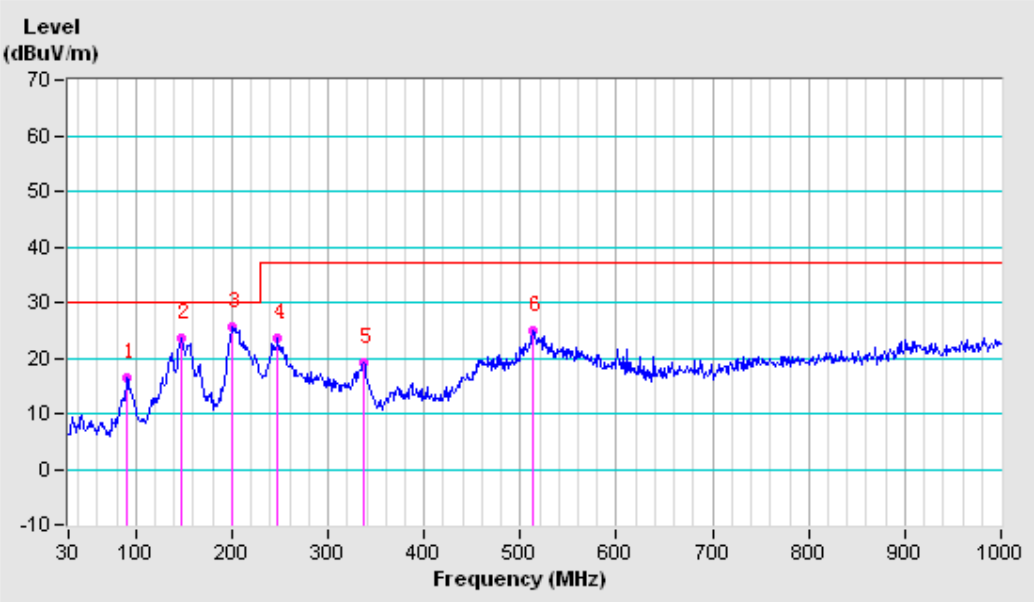
3.2.7 TEST RESULTS

Below 1GHz

TEST MODE	Charging	**FREQUENCY RANGE**	30-1000MHz
TEST VOLTAGE	DC 5V from USB	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	22 deg. C,64% RH	**TESTED BY:** Luke	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	91.353	-26.43	42.89	16.46	30.00	-13.54	400	39
2	147.127	-22.39	45.93	23.54	30.00	-6.46	200	23
3	200.841	-24.28	50.01	25.73	30.00	-4.27	400	42
4	246.431	-22.62	46.31	23.69	37.00	-13.31	200	23
5	337.248	-19.76	39.05	19.29	37.00	-17.71	200	350
6	513.788	-16.06	41.12	25.06	37.00	-11.94	200	35

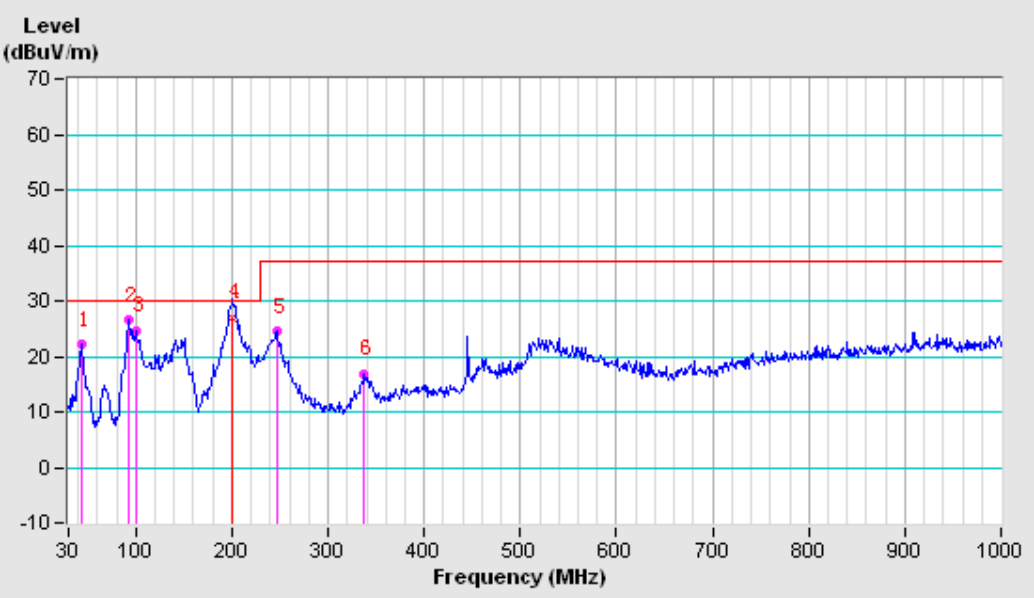
REMARKS: The emission levels of other frequencies were very low against the limit.



TEST MODE	Charging	**FREQUENCY RANGE**	30-1000MHz
TEST VOLTAGE	DC 5V from USB	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	22 deg. C,64% RH	**TESTED BY:** Luke	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	43.701	-22.17	44.27	22.10	30.00	-7.90	300	281
2	92.808	-26.22	52.68	26.46	30.00	-3.54	100	333
3	99.476	-24.70	49.20	24.50	30.00	-5.50	100	49
4	**200.024**	**-25.16**	**52.06**	**26.90**	**30.00**	**-3.10**	**100**	**134**
5	246.431	-21.05	45.49	24.44	37.00	-12.56	100	19
6	337.854	-18.63	35.41	16.78	37.00	-20.22	300	173

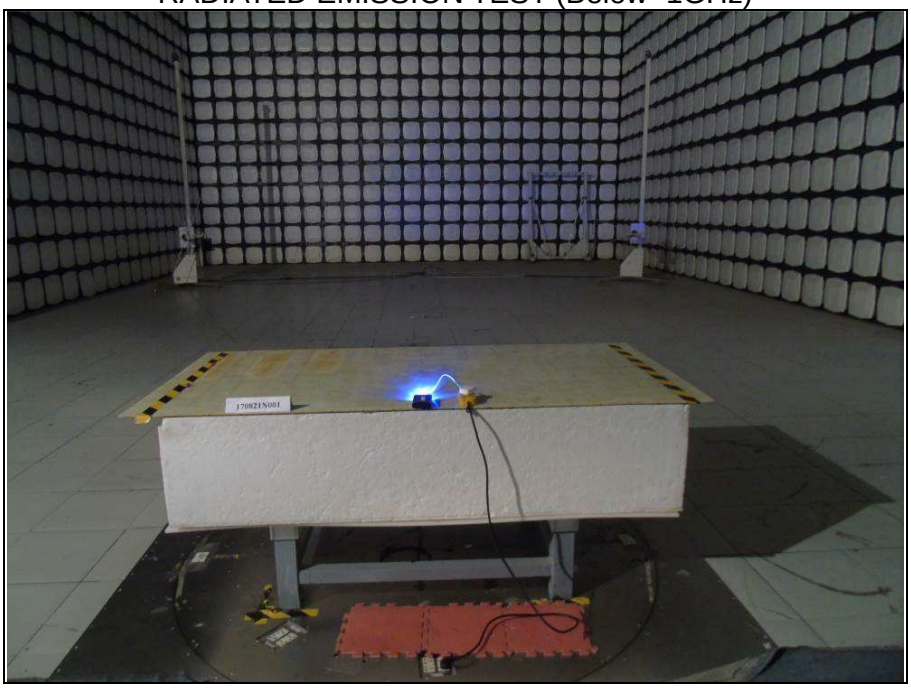
REMARKS: The emission levels of other frequencies were very low against the limit.

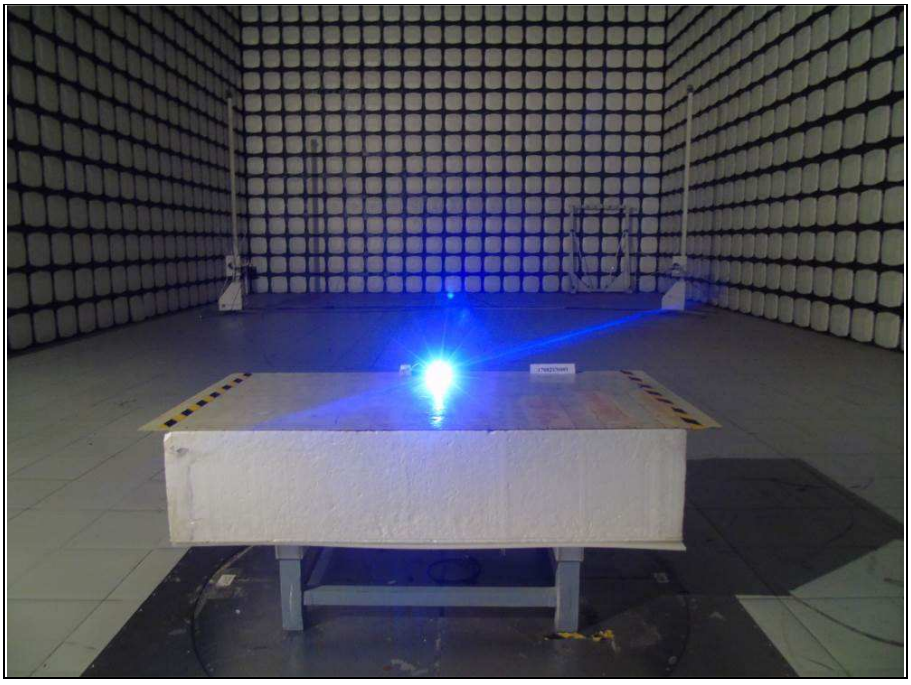


4 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

RADIATED EMISSION TEST (Below -1GHz)





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5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

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