TEST REPORT

Applicant	:	**Ninghai Tantulong Outdoor Products co. LTD.**
Address	:	Wang Jia 1197, Xidian Town, Ninghai County, Ningbo City, Zhejiang Province, China
Manufacturer	:	**Ninghai Tantulong Outdoor Products co. LTD.**
Address	:	Wang Jia 1197, Xidian Town, Ninghai County, Ningbo City, Zhejiang Province, China

The following sample(s) was/were submitted and identified on behalf of the clients as :

Sample Name	:	**Multi-Function Vehicle Safety Hammer Flashlight**
Trademark	:	**N/A**
Model Number	:	**BJ-T01, BJ-02, BJ-T03, BJ-T04, BJ-1012, F03, F18, F28, W01, W02, W03, W08, W09, W10, W11, K78, K95.**
Sample received date	:	**Jul. 03, 2019**
Test completed date	:	**Jul. 03, 2019 - Jul. 16, 2019**
Test requested	:	Selected test(s) as requested by client..
Test method	:	Please refer to next page(s)..
Test result	:	Please refer to next page.
Conclusion	:	Based on the performed tests on selected part of submitted sample(s), the results of Cadmium, Lead, Mercury, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs), Disobutyl Phthalate(DIBP), Dibutyl Phthalate(DBP), Benzylbutyl phthalate(BBP), Bis-(2-ethylhexyl) Phthalate(DEHP) do not exceed the limits as set by council RoHS 2.0 Directive 2011/65/EU Annex II (EU) 2015/863 as last amended by Directive (EU) 2017/2012.

Approved by: _____ **Date:** Jul. 16, 2019

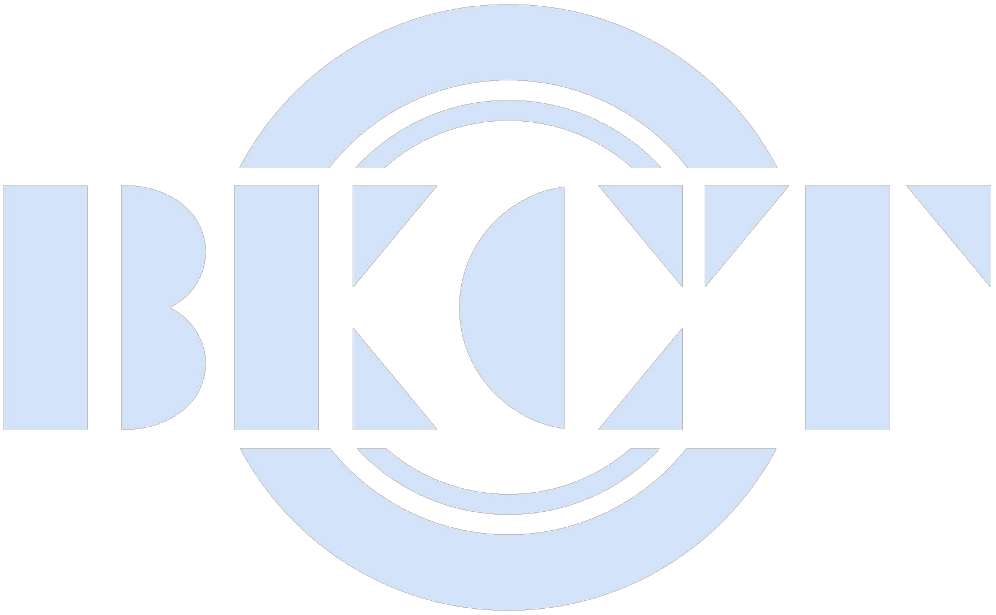
Tested Part Description:

(1) BLACK METAL
(2) BLACK PLASTIC
(3) SCREW
(4) SLIVERY METAL
(5) RED PLASTIC
(6) TRANSPARENT PLASTIC
(7) LED
(8) RED WIRE-COATING
(9) RED WIRE-COPPER
(10) BLUE WIRE-COATING
(11) BLACK WIRE-COATING
(12) BLACK WIRE-COATING
(13) PCB
(14) TIN
(15) BUTTON-BLACK PLASTIC
(16) BUTTON-METAL
(17) SMD POWER INDUCTOR
(18) SMD TRANSISTOR
(19) SMD CAPACITOR
(20) SMD RESISTOR
(21) USB PORT-METAL
(22) USB PORT-PLASTIC
(23) IC-BODY
(24) IC-PIN

Remarks :.
(1) 1 mg/kg = 0.0001%.
(2) MDL = Method Detection Limit.
(3) N.D. = Not Detected (< MDL).
(4) "-" = Not Regulated.

RoHS 2.0 Directive 2011/65/EU Annex II (EU) 2015/863 as last amended by Directive (EU) 2017/2012.

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC 62321-6:2015, IEC 62321-7-1:2015, IEC62321-7-2:2017 and IEC62321-8: 2017 analyzed by ICP-OES , UV-Vis and GC-MS .



Test Item(s).	Limit.	Unit.	MDL	(1)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(2)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Test Item(s).	Limit.	Unit.	MDL	(3)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(4)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(5)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Test Item(s).	Limit.	Unit.	MDL	(6)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Test Item(s).	Limit.	Unit.	MDL	(7)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Test Item(s).	Limit.	Unit.	MDL	(8)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Test Item(s).	Limit.	Unit.	MDL	(9)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(10)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Test Item(s).	Limit.	Unit.	MDL	(11)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Test Item(s).	Limit.	Unit.	MDL	(12)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Test Item(s).	Limit.	Unit.	MDL	(13)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(14)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(15)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Test Item(s).	Limit.	Unit.	MDL	(16)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(17)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(18)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(19)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(20)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(21)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(22)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Test Item(s).	Limit.	Unit.	MDL	(23)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.A.
Monobromobiphenyl	-	mg/kg	5	N.A.
Dibromobiphenyl	-	mg/kg	5	N.A.
Tribromobiphenyl	-	mg/kg	5	N.A.
Tetrabromobiphenyl	-	mg/kg	5	N.A.
Pentabromobiphenyl	-	mg/kg	5	N.A.
Hexabromobiphenyl	-	mg/kg	5	N.A.
Heptabromobiphenyl	-	mg/kg	5	N.A.
Octabromobiphenyl	-	mg/kg	5	N.A.
Nonabromobiphenyl	-	mg/kg	5	N.A.
Decabromobiphenyl	-	mg/kg	5	N.A.
Sum of PBDEs.	1000	mg/kg	-	N.A.
Monobromodiphenyl ether	-	mg/kg	5	N.A.
Dibromodiphenyl ether	-	mg/kg	5	N.A.
Tribromodiphenyl ether	-	mg/kg	5	N.A.
Tetrabromodiphenyl ether	-	mg/kg	5	N.A.
Pentabromodiphenyl ether	-	mg/kg	5	N.A.
Hexabromodiphenyl ether	-	mg/kg	5	N.A.
Heptabromodiphenyl ether	-	mg/kg	5	N.A.
Octabromodiphenyl ether	-	mg/kg	5	N.A.
Nonabromodiphenyl ether	-	mg/kg	5	N.A.
Decabromodiphenyl ether	-	mg/kg	5	N.A.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.A.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.A.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.A.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.A.

Test Item(s).	Limit.	Unit.	MDL	(24)
Cadmium (Cd)	100	mg/kg	2	N.D.
Lead (Pb)	1000	mg/kg	2	N.D.
Mercury (Hg)	1000	mg/kg	2	N.D.
Hexavalent Chromium (Cr^{6+})	1000	mg/kg	8	N.D.
Sum of PBBs.	1000	mg/kg	-	N.D.
Monobromobiphenyl	-	mg/kg	5	N.D.
Dibromobiphenyl	-	mg/kg	5	N.D.
Tribromobiphenyl	-	mg/kg	5	N.D.
Tetrabromobiphenyl	-	mg/kg	5	N.D.
Pentabromobiphenyl	-	mg/kg	5	N.D.
Hexabromobiphenyl	-	mg/kg	5	N.D.
Heptabromobiphenyl	-	mg/kg	5	N.D.
Octabromobiphenyl	-	mg/kg	5	N.D.
Nonabromobiphenyl	-	mg/kg	5	N.D.
Decabromobiphenyl	-	mg/kg	5	N.D.
Sum of PBDEs.	1000	mg/kg	-	N.D.
Monobromodiphenyl ether	-	mg/kg	5	N.D.
Dibromodiphenyl ether	-	mg/kg	5	N.D.
Tribromodiphenyl ether	-	mg/kg	5	N.D.
Tetrabromodiphenyl ether	-	mg/kg	5	N.D.
Pentabromodiphenyl ether	-	mg/kg	5	N.D.
Hexabromodiphenyl ether	-	mg/kg	5	N.D.
Heptabromodiphenyl ether	-	mg/kg	5	N.D.
Octabromodiphenyl ether	-	mg/kg	5	N.D.
Nonabromodiphenyl ether	-	mg/kg	5	N.D.
Decabromodiphenyl ether	-	mg/kg	5	N.D.
Disobutyl Phthalate(DIBP)	1000	mg/kg	50	N.D.
Dibutyl Phthalate(DBP)	1000	mg/kg	50	N.D.
Benzylbutyl Phthalate(BBP)	1000	mg/kg	50	N.D.
Bis-(2-ethylhexyl) Phthalate(DEHP)	1000	mg/kg	50	N.D.

Notes :
(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.IEC 62321 series is equivalent to EN 62321 series
http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101::::FSP_ORG_ID,FSP_LANG_ID:1258637,25.

(2) On 4 June 2015, Commission Directive (EU) 2015/863 was published in the Official Journal of the European Union (OJEU) to include the phthalates BBP, DBP, DEHP and DIBP into ANNEX II of the Rohs Recast Directive. The new law restricts each phthalate to no more than 0.1% in each homogeneous material of an electrical product.

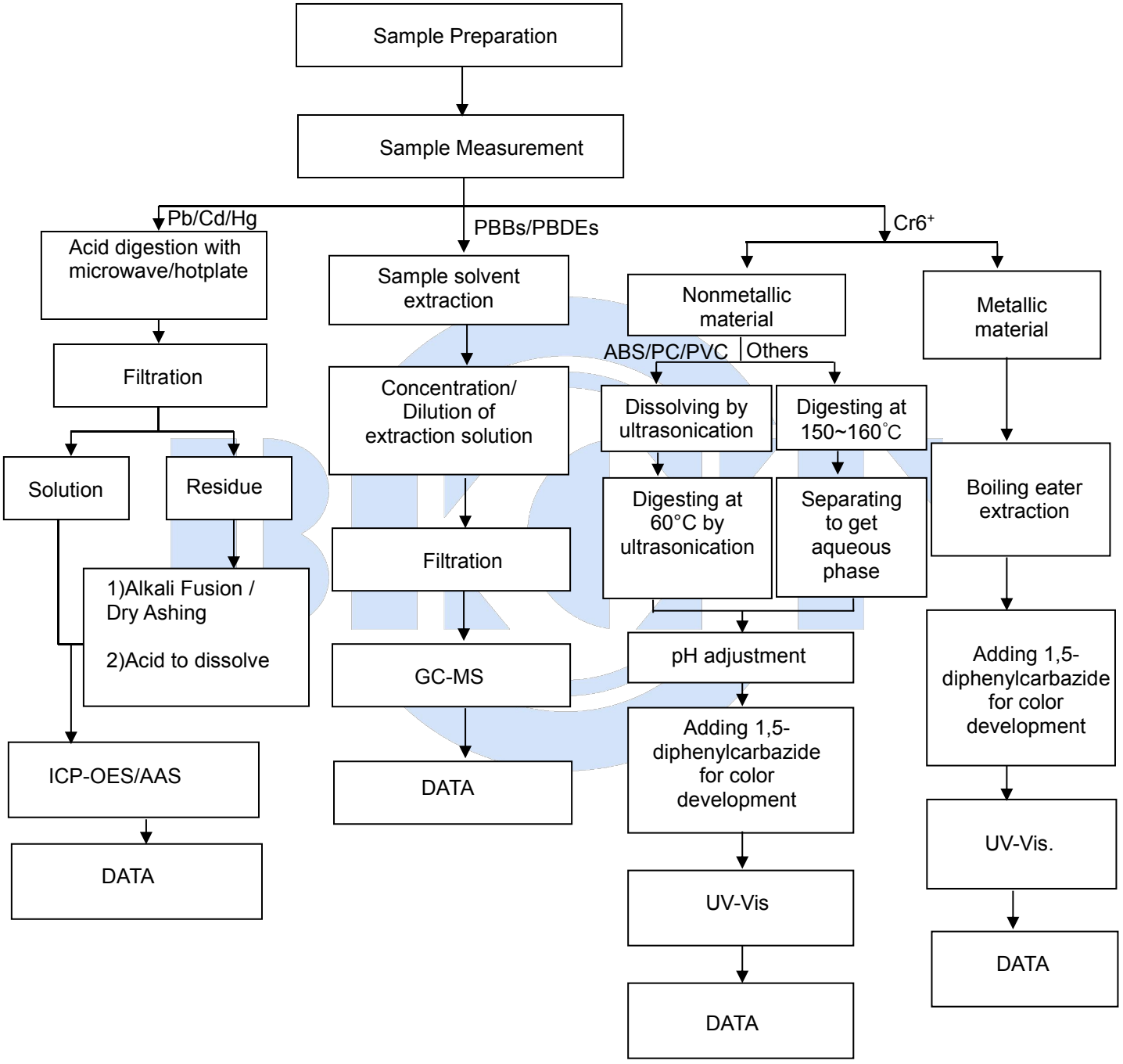
(3) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

(3) The restriction of DEHP, BBP, DBP and DIBP shall not apply to cables or spare parts for the repair, the reuse, the updating of functionalities or upgrading of capacity of EEE placed on the market before 22 July 2019, and of medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, placed on the market before 22 July 2021.

(5) The restriction of DEHP, BBP and DBP shall not apply to toys which are already subject to the restriction of DEHP, BBP and DBP through entry 51 of Annex XVII to Regulation (EC) No 1907/2006.

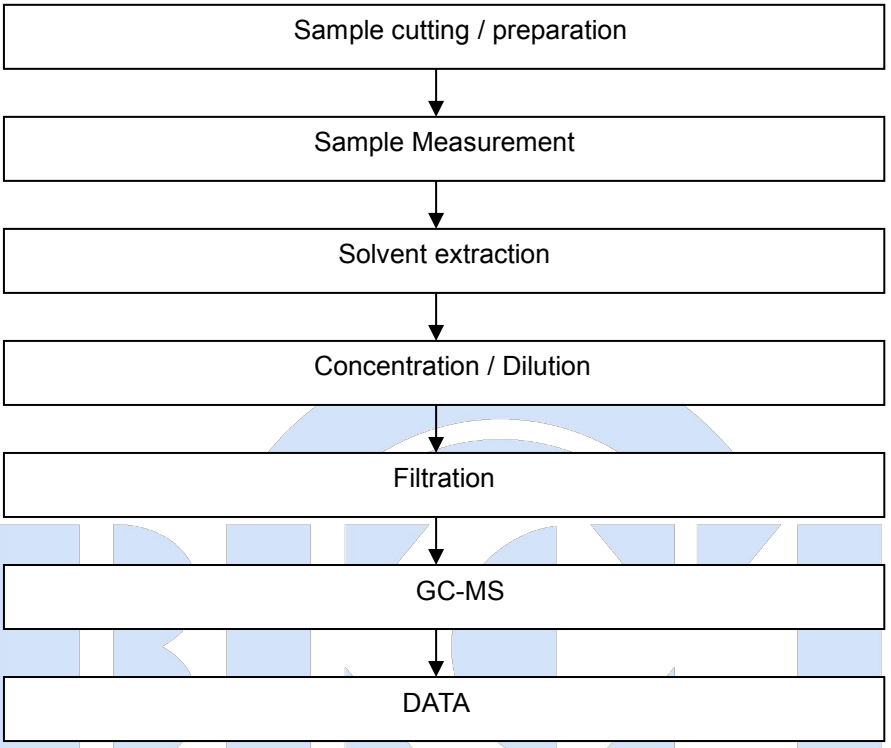
Pb/Cd/Hg/Cr6+/PBBs/PBDEs Testing Flow Chart

1) Name of the person who made testing:Mila Zhou
2) Name of the person in charge testing: Vicent Mei
3) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr^{6+} and PBBs/PBDEs test method excluded).



Phthalats Testing Flow Chart

1) Name of the person who made testing:Mila Zhou
2) Name of the person in charge testing: Vicent Mei



PHOTOGRAPHS OF TEST SAMPLE

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

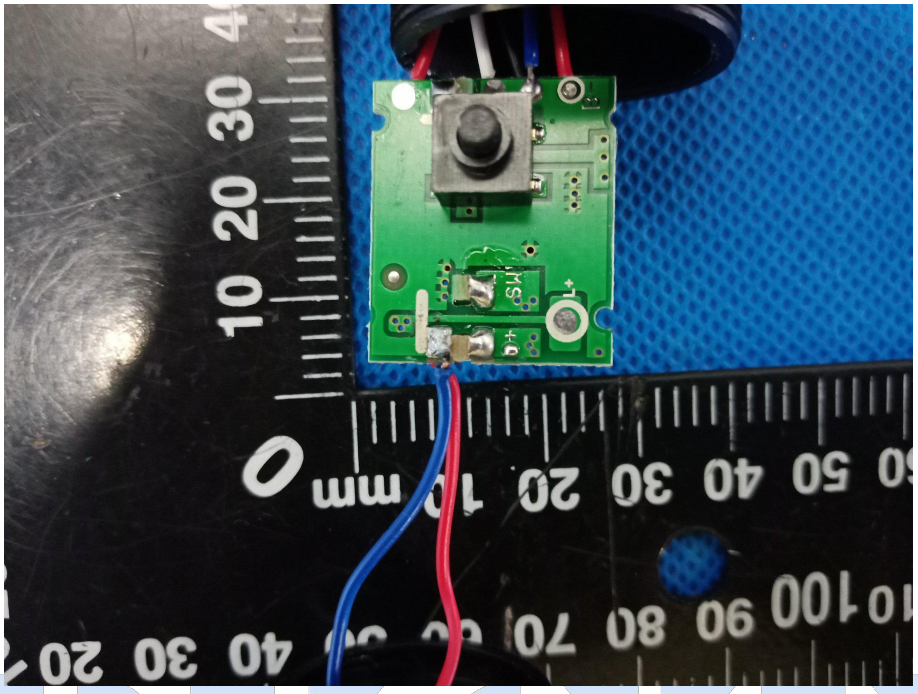


Photo 6

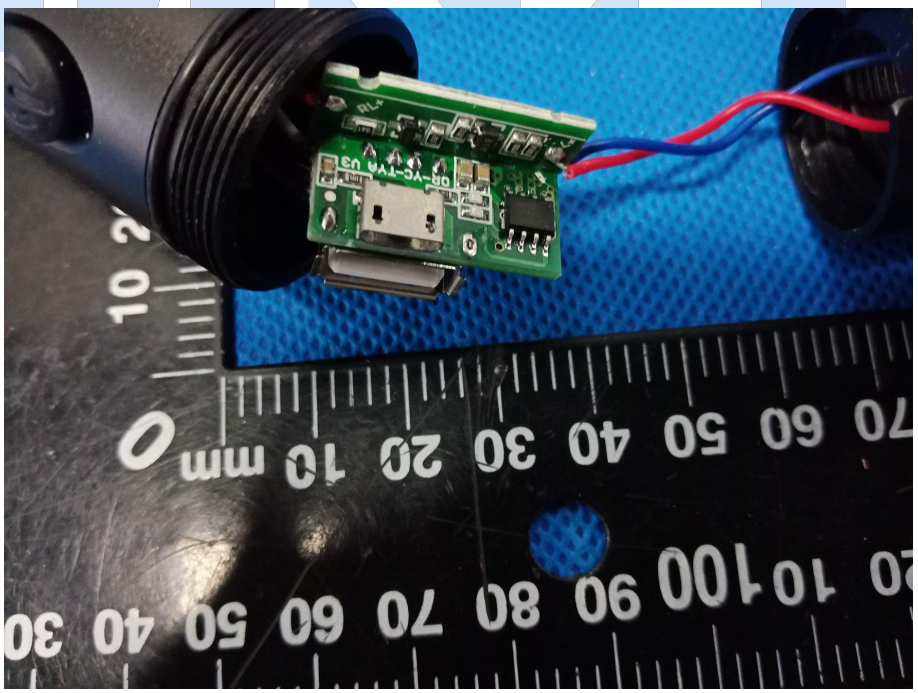
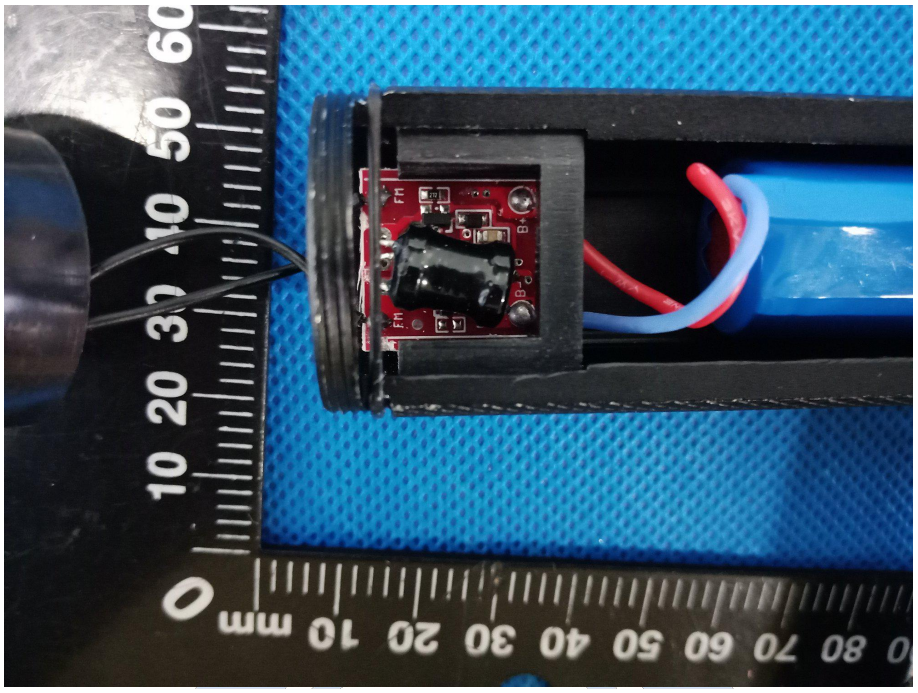


Photo 7



※※※※※ **END OF REPORT** ※※※※※

HUAK TESTING

FCC
TEST REPORT

Prepared for :

Ninghai Tantu Long Outdoor Products Co., Ltd.

No.1197, Wangjia, Xidian Town, Ninghai County, Ningbo City, Zhejiang Province, China

Product:	**Multifunctional Vehicle-Mounted Safety Hammer Flashlight**
Trade Name:	**ExploringThe Dragon**
Model Name:	**BJ-T01, BJ-02, BJ-T03, BJ-T04, BJ-1012, F03, F18, F28, W01, W02, W03, W08, W09, W10, W11, K78, K95**
Date of Test:	**Jul. 13, 2019 - Jul. 19, 2019**
Date of Report:	**Jul. 19, 2019**
Report Number:	**HK1907121647-1ER**

Prepared By :

Shenzhen HUAK Testing Technology Co., Ltd.

1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, China

TEL: +86-755-2302 9901 FAX: +86-755-2302 9901

E-mail: service@cer-mark.com http://www.cer-mark.com

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TEST REPORT VERIFICATION

Applicant	:	Ninghai Tantu Long Outdoor Products Co., Ltd.
Address	:	No.1197, Wangjia, Xidian Town, Ninghai County, Ningbo City, Zhejiang Province, China
Manufacturer	:	Ninghai Tantu Long Outdoor Products Co., Ltd.
Address	:	No.1197, Wangjia, Xidian Town, Ninghai County, Ningbo City, Zhejiang Province, China
EUT Description	:	Multifunctional Vehicle-Mounted Safety Hammer Flashlight
(A) Model No.	:	BJ-T01
(B) Serial No.	:	BJ-02, BJ-T03, BJ-T04, BJ-1012, F03, F18, F28, W01, W02, W03, W08, W09, W10, W11, K78, K95
(C) Power Supply	:	DC5V From Micro USB or DC 3.7V From Battery

Standards..... FCC Part 15 Subpart B
ANSI C63.4:2014

This device described above has been tested by HUAK, and the test results show that the equipment under test (EUT) is in compliance with Part 15 of FCC Rules. And it is applicable only to the tested sample identified in the report.

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Test Result..... **Pass**

Date of Test: Jul. 13, 2019 - Jul. 19, 2019

Testing Engineer: (Gary Qian)

Technical Manager: (Eden Hu)

Authorized Signatory: (Jason Zhou)

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1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC Part 15 Subpart B ANSI C63.4:2014	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	

NOTE:

(1) 'N/A' denotes test is not applicable in this Test Report

(2) For client's request and manual description, the test will not be executed.

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1.1 TEST FACILITY

Shenzhen HUAK Testing Technology Co., Ltd.
Add. : 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, China

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	3.2	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
A01	ANSI	30MHz ~ 1000MHz	4.7	

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Multifunctional Vehicle-Mounted Safety Hammer Flashlight
Model Name	BJ-T01
Serial No	BJ-02, BJ-T03, BJ-T04, BJ-1012, F03, F18, F28, W01, W02, W03, W08, W09, W10, W11, K78, K95
Model Difference	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: BJ-T01
Product Description	The EUT is a Multifunctional Vehicle-Mounted Safety Hammer Flashlight . Operating frequency: N/A Connecting I/O port: N/A Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Power Source	DC Voltage
Power Rating	DC5V From Micro USB or DC 3.7V From Battery

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2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Running

For Conducted Test	
Final Test Mode	Description
Mode 1	Running

For Radiated Test	
Final Test Mode	Description
Mode 1	Running

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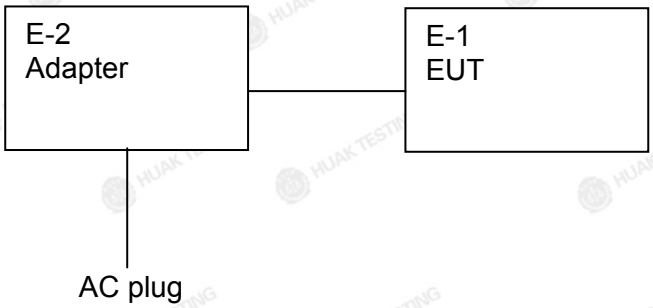
2.3 DESCRIPTION OF TEST SETUP

Mode 1:



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2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Multifunctional Vehicle-Mounted Safety Hammer Flashlight	ExploringThe Dragon	BJ-T01	N/A	EUT
E-2	Adapter	HUAWEI	HW-051000CHQ	N/A	

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

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2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Dec. 27, 2018	1 Year
2.	Receiver	R&S	ESCI 7	HKE-010	Dec. 27, 2018	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 27, 2018	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Dec. 27, 2018	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 27, 2018	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 27, 2018	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 27, 2018	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 27, 2018	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 27, 2018	1 Year
10.	Horn Antenna	Schewarzbeck	9120D	HKE-013	Dec. 27, 2018	1 Year
11.	Pre-amplifier	EMCI	EMC051845SE	HKE-015	Dec. 27, 2018	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Dec. 27, 2018	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	Dec. 27, 2018	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Dec. 27, 2018	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 27, 2018	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Dec. 27, 2018	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Dec. 27, 2018	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 27, 2017	3 Year

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3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

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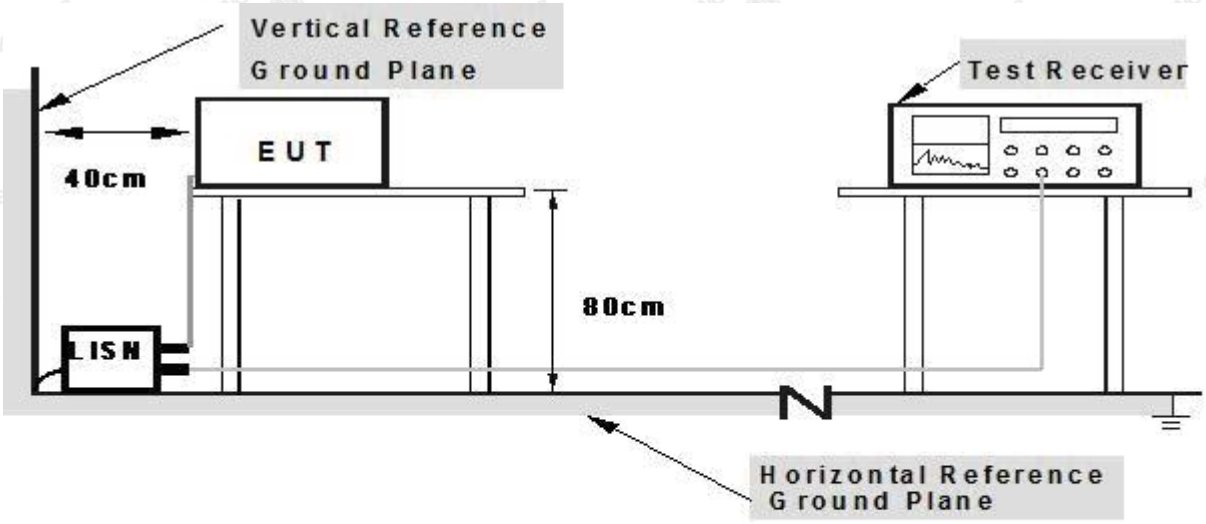
3.1.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



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

3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

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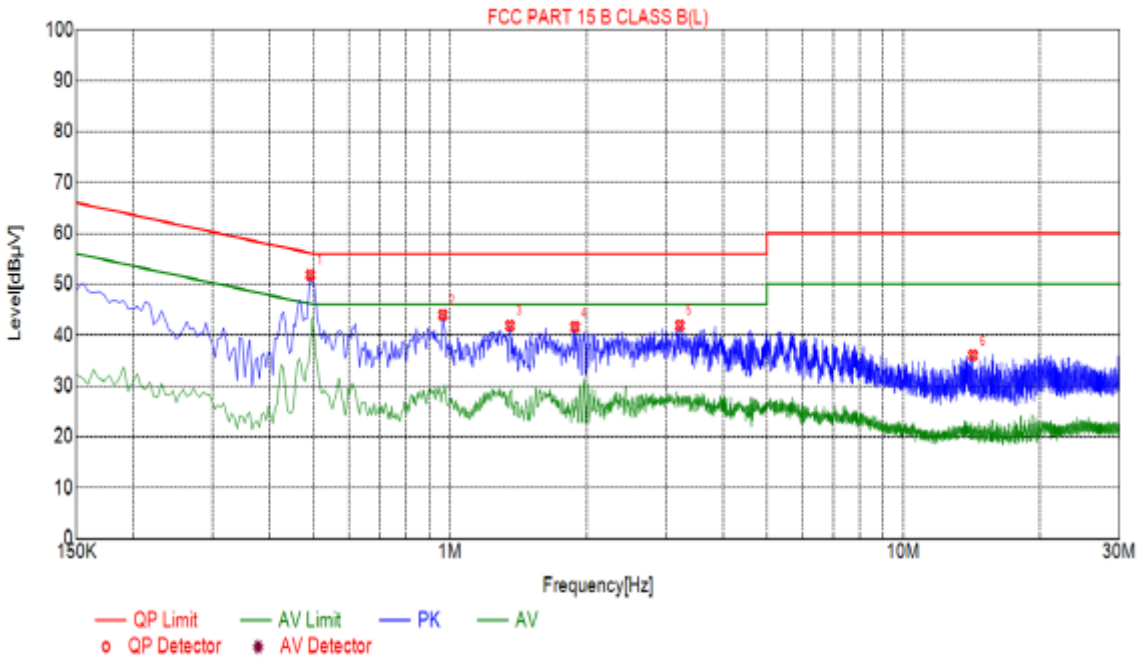
3.1.5 TEST RESULTS

Note:

All the test modes completed for test. only the worst result of was reported.

as below:

EUT：	Multifunctional Vehicle-Mounted Safety Hammer Flashlight	Model Name. ：	BJ-T01
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Date：	2019-07-16
Test Mode：	Running	Phase：	L
Test Voltage ：	DC5V From Micro USB		



Suspected List

NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Detector
1	0.4920	51.84	10.04	56.13	4.29	PK
2	0.9645	44.00	10.06	56.00	12.00	PK
3	1.3560	41.86	10.10	56.00	14.14	PK
4	1.8870	41.62	10.14	56.00	14.38	PK
5	3.2145	41.91	10.23	56.00	14.09	PK
6	14.2485	36.02	9.95	60.00	23.98	PK

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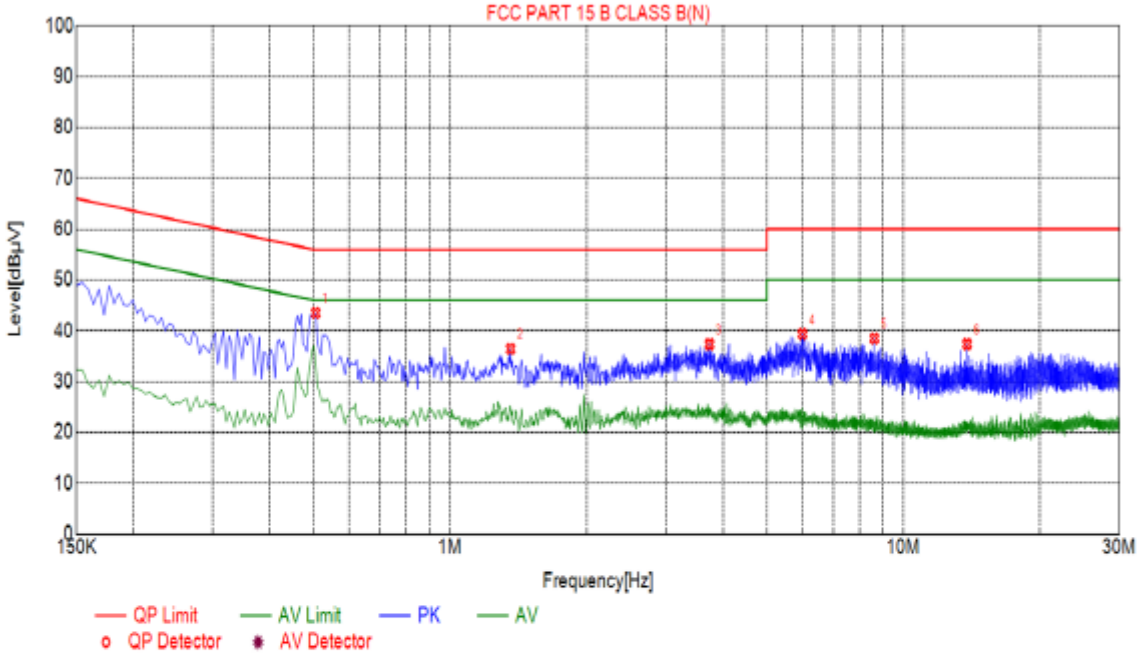
EUT：	Multifunctional Vehicle-Mounted Safety Hammer Flashlight	Model Name. ：	BJ-T01
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Date：	2019-07-16
Test Mode：	Running	Phase：	N
Test Voltage ：	DC5V From Micro USB		



Suspected List

NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Detector
1	0.5055	43.49	10.04	56.00	12.51	PK
2	1.3605	36.45	10.11	56.00	19.55	PK
3	3.7365	37.36	10.25	56.00	18.64	PK
4	5.9910	39.34	10.23	60.00	20.66	PK
5	8.6370	38.50	10.12	60.00	21.50	PK
6	13.8300	37.38	9.96	60.00	22.62	PK

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3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

Notes:

(1) The limit for radiated test was performed according to as following: FCC PART 15B /ICES-003.

(2) The tighter limit applies at the band edges.

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

3.2.2 TEST PROCEDURE

a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.

e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.

f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

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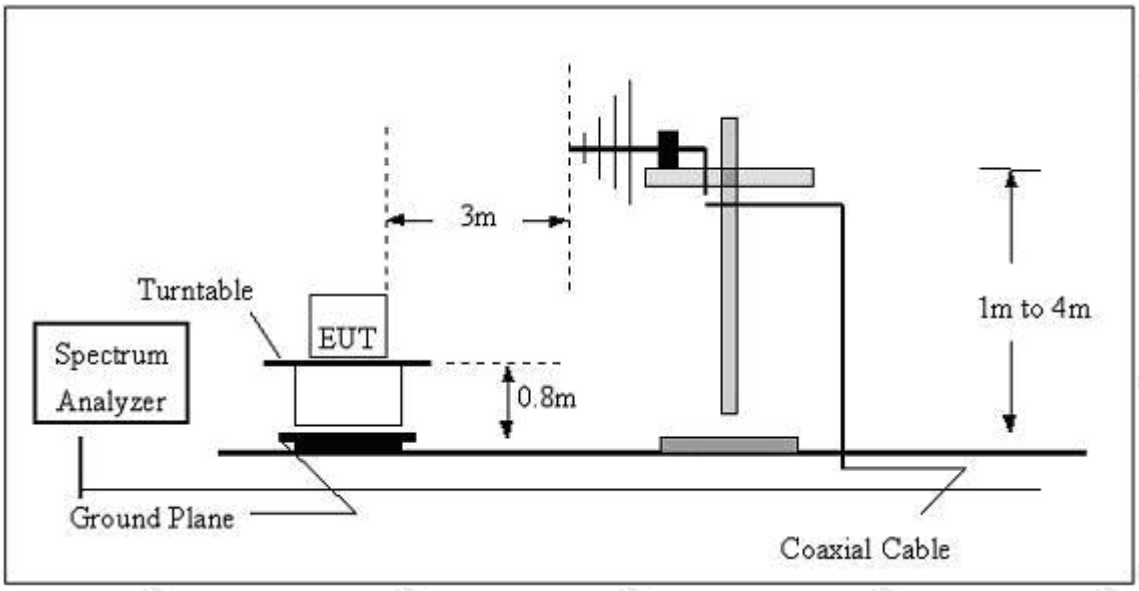
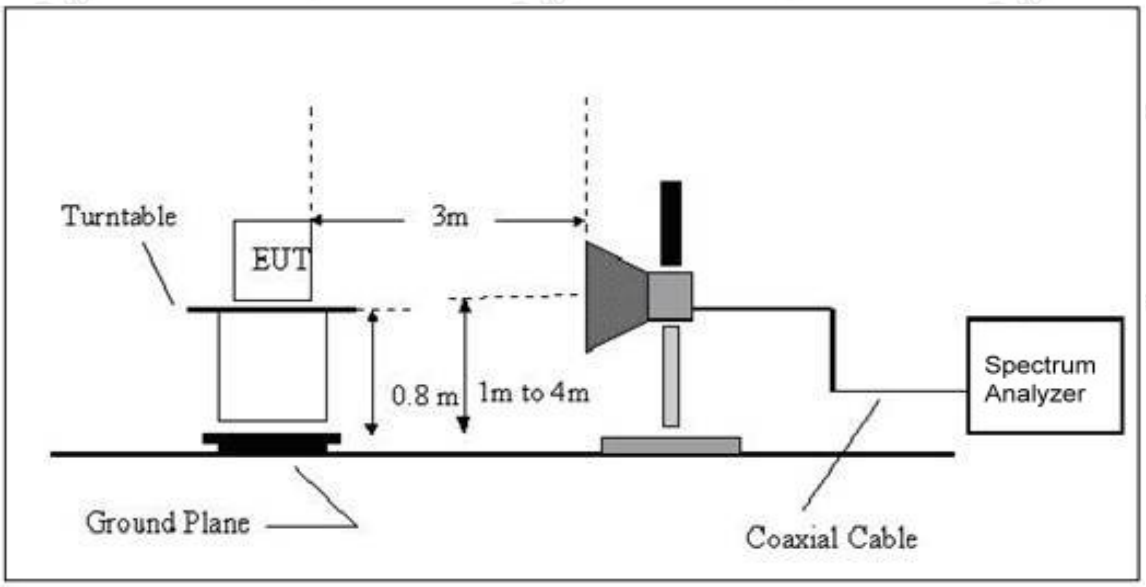
3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

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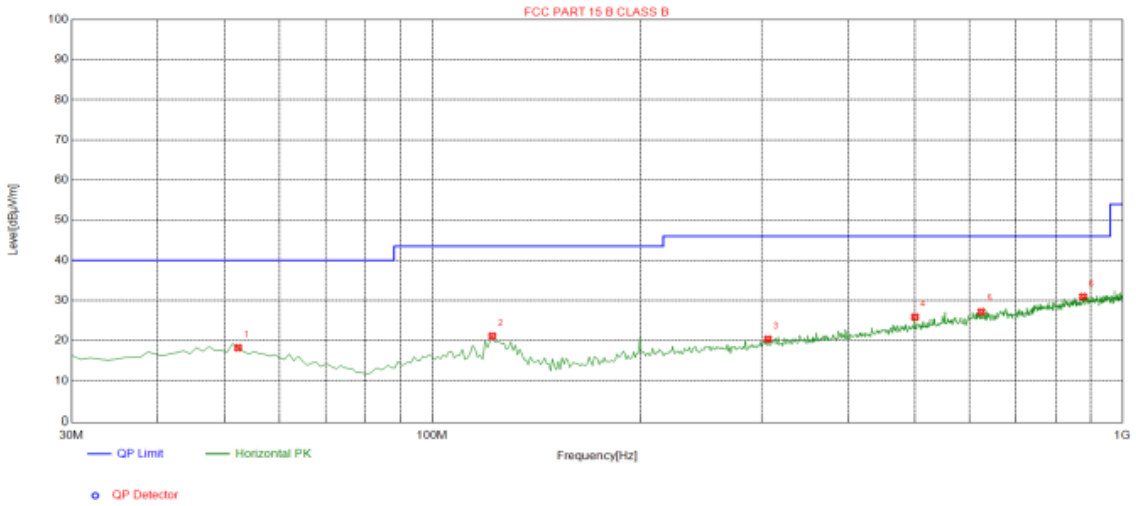
3.2.5 TEST RESULTS

Note:
All the test modes completed for test. only the worst result of was reported.
as below:

EUT：	Multifunctional Vehicle-Mounted Safety Hammer Flashlight	Model Name ：	BJ-T01
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Date：	2019-07-16
Test Mode ：	Running	Polarization：	Horizontal
Test Power ：	DC5V From Micro USB		



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	52.3100	18.22	-14.00	40.00	21.78	100	324	Horizontal
2	122.150	21.13	-17.42	43.50	22.37	100	174	Horizontal
3	306.450	20.36	-12.65	46.00	25.64	100	115	Horizontal
4	500.450	25.86	-8.29	46.00	20.14	100	197	Horizontal
5	624.610	27.18	-5.50	46.00	18.82	100	252	Horizontal
6	876.810	30.94	-2.12	46.00	15.06	100	334	Horizontal

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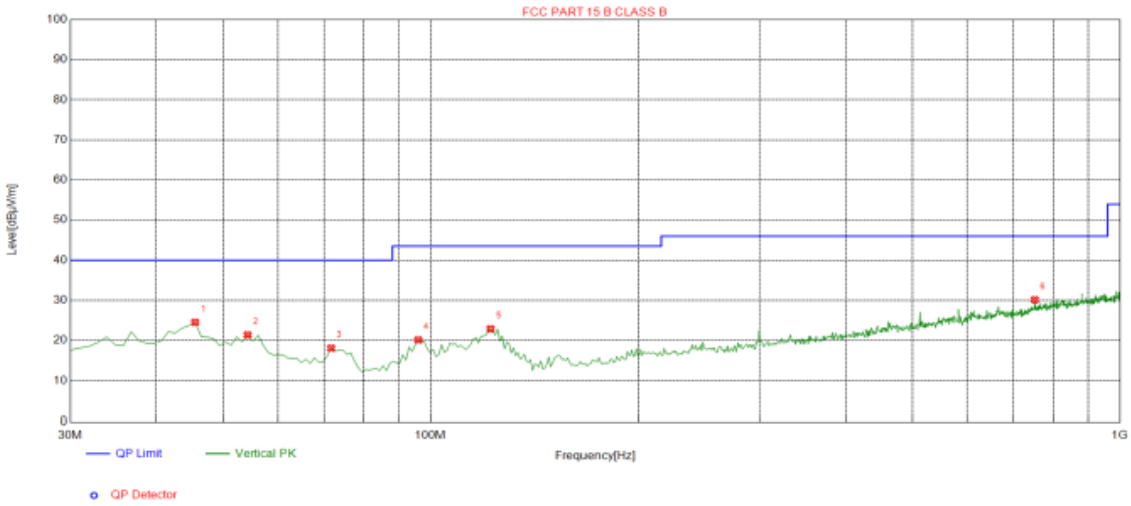
EUT：	Multifunctional Vehicle-Mounted Safety Hammer Flashlight	Model Name ：	BJ-T01
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Date：	2019-07-16
Test Mode ：	Running	Polarization：	Vertical
Test Power ：	DC5V From Micro USB		



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	45.5200	24.52	-13.65	40.00	15.48	100	30	Vertical
2	54.2500	21.39	-14.29	40.00	18.61	100	111	Vertical
3	71.7100	18.10	-17.98	40.00	21.90	100	211	Vertical
4	95.9600	20.15	-16.07	43.50	23.35	100	249	Vertical
5	122.150	22.89	-17.42	43.50	20.61	100	195	Vertical
6	752.650	30.15	-3.66	46.00	15.85	100	130	Vertical

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3.2.6 TEST RESULTS(Above 1GHz)

EUT：	Multifunctional Vehicle-Mounted Safety Hammer Flashlight	Model Name ：	BJ-T01
Temperature：	N/A	Relative Humidity：	N/A
Pressure：	N/A	Test Date：	N/A
Test Mode ：	N/A		
Test Power ：	N/A		

Note:

1) N/A - denotes test is not applicable in this test report

2) There was not any unintentional transmission in standby mode

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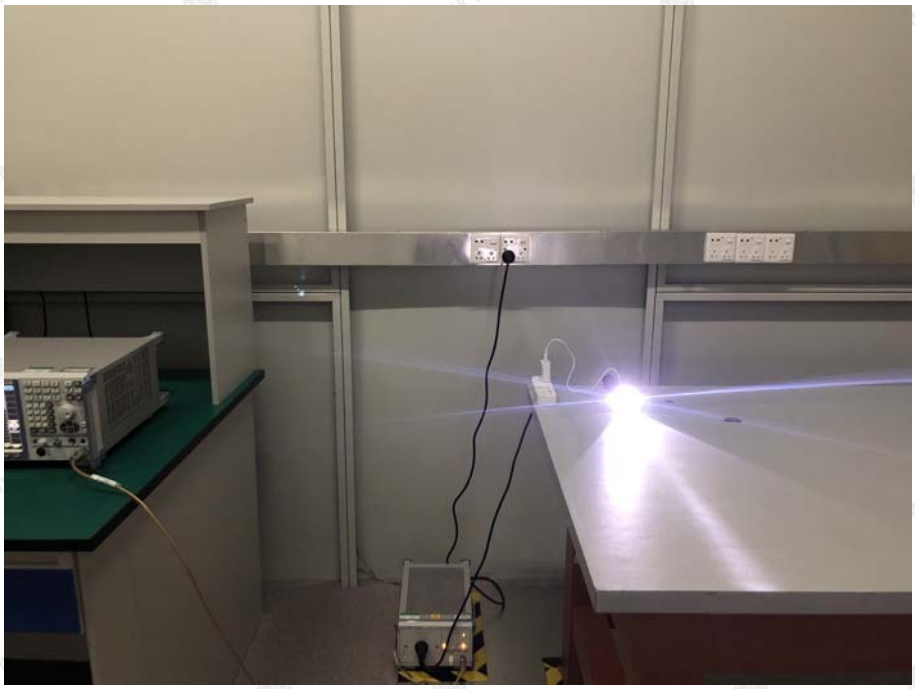
4. EUT TEST PHOTO



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ATTACHMENT PHOTOGRAPHS OF EUT

Photo 1

Photo 2

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HUAK Testing Lab TEL : +86-755 2302 9901 FAX : +86-755 2302 9901 E-mail : service@cer-mark.com
Add: 1/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Photo 3

Photo 4

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Photo 5

Photo 6

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Photo 7

Photo 8

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Photo 9

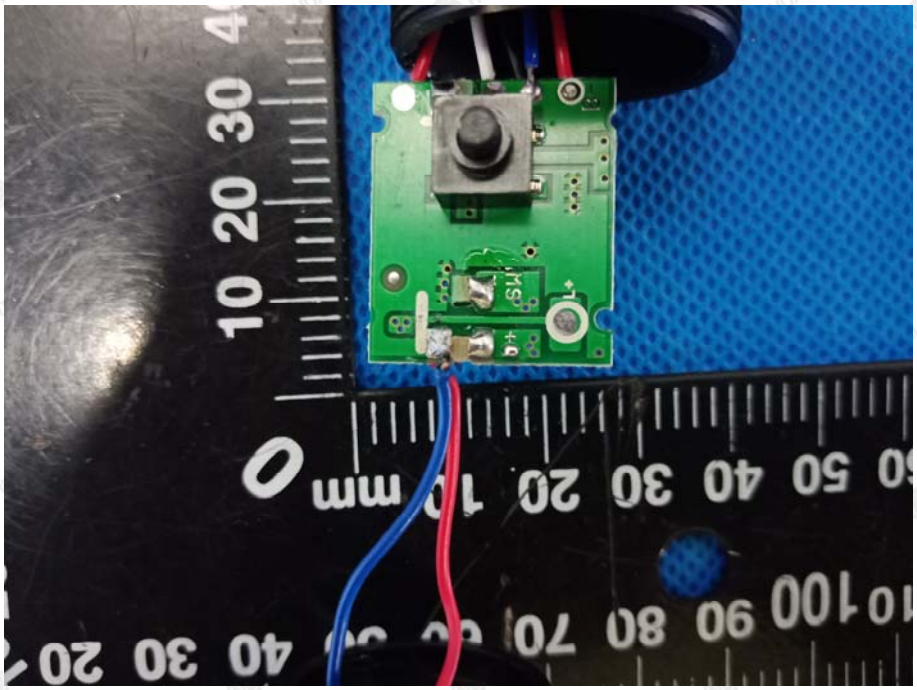

Photo 10

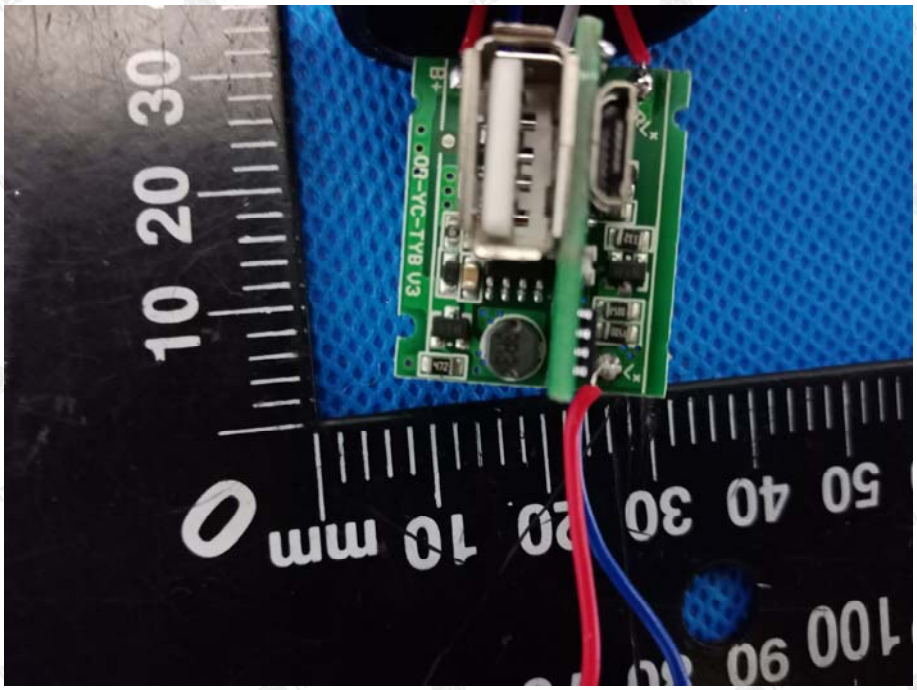

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Photo 11

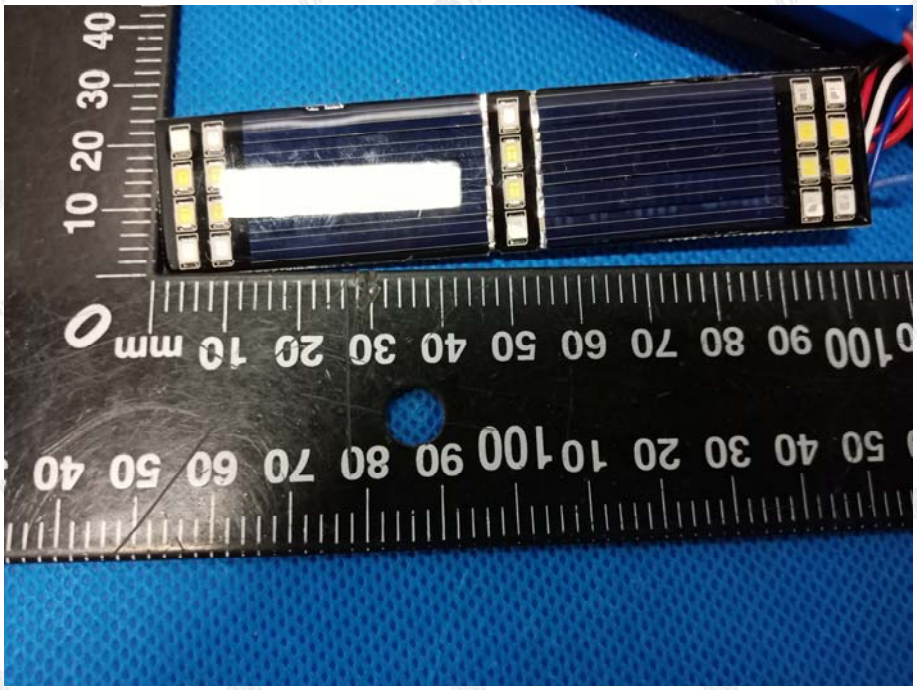

Photo 12

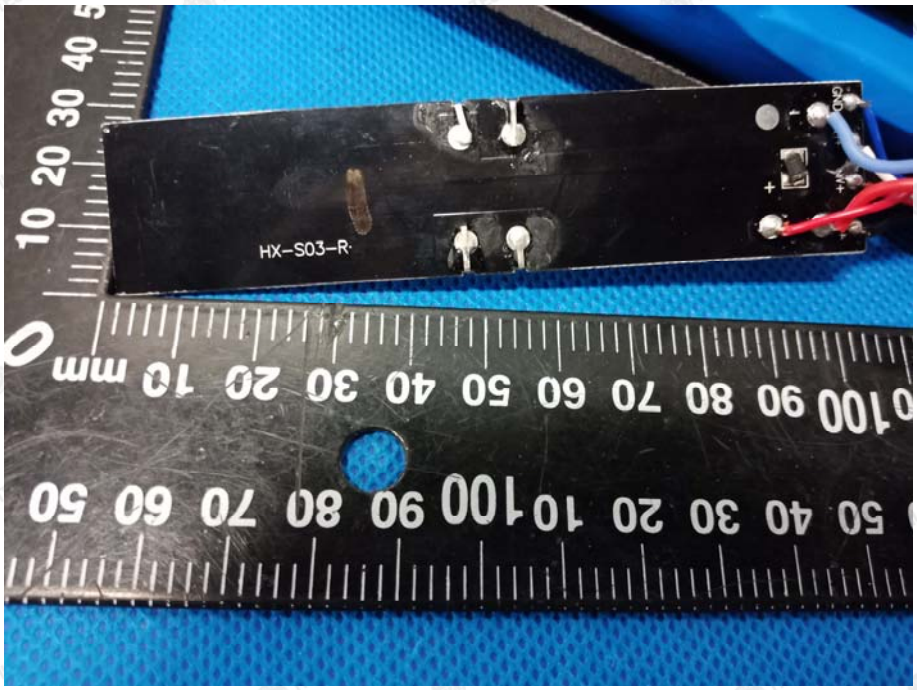

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Photo 13

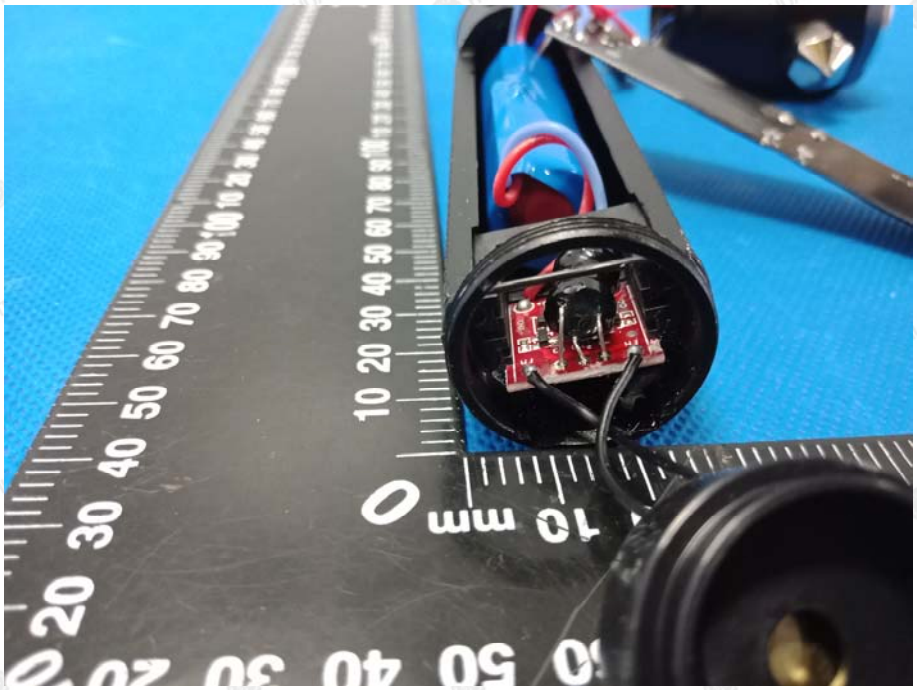

Photo 14

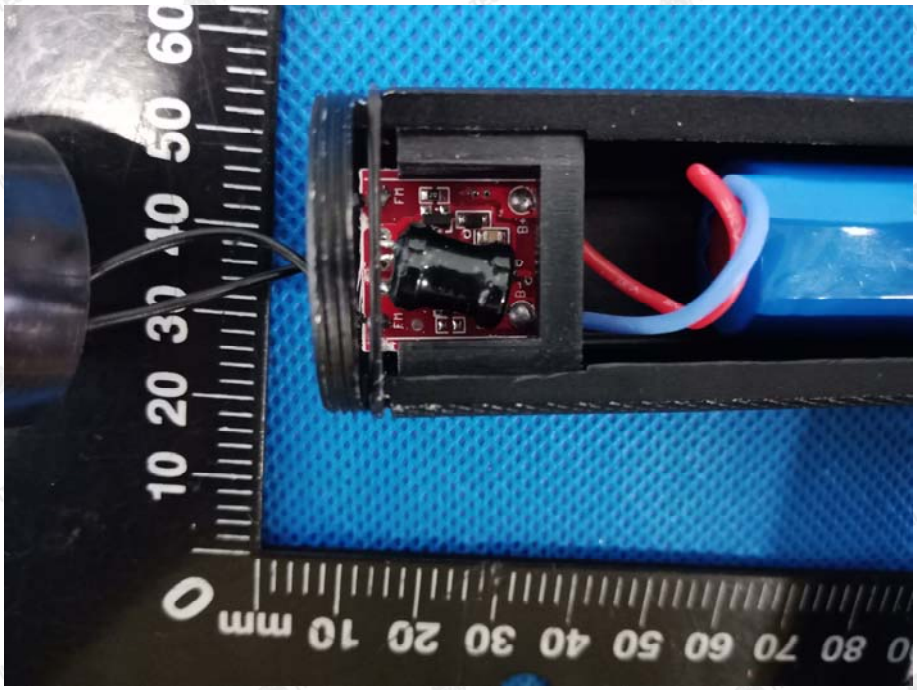

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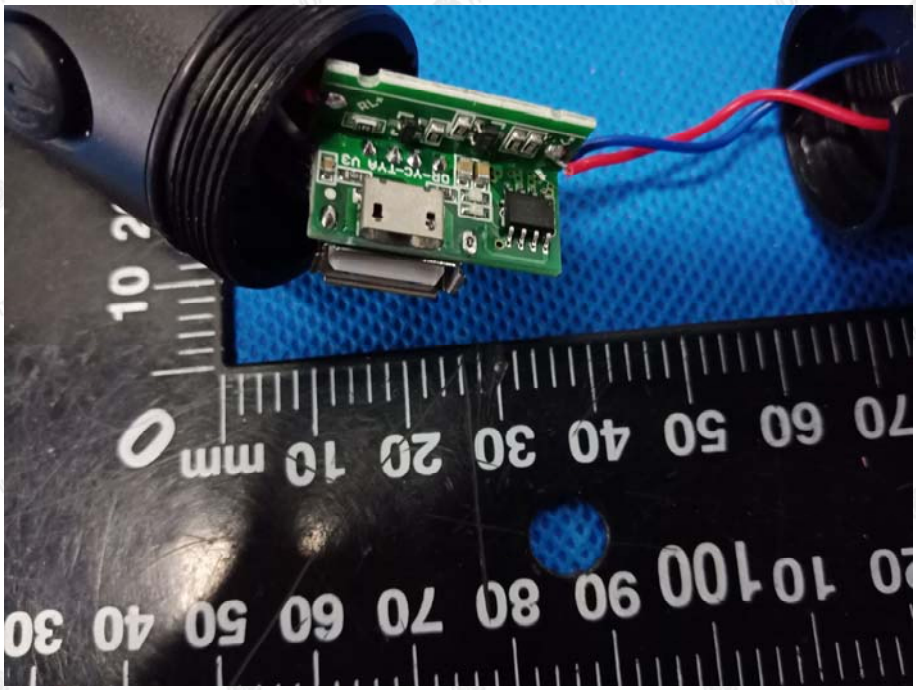
Photo 15



.....End of Report.....

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CE EMC TEST REPORT

On Behalf of

Ninghai Tantulong Outdoor Products co. LTD.

Product Name:	Multi-Function Vehicle Safety Hammer Flashlight
Trademark:	N/A
Model Number:	BJ-T01, BJ-02, BJ-T03, BJ-T04, BJ-1012, F03, F18, F28, W01, W02, W03, W08, W09, W10, W11, K78, K95.
Prepared For:	Ninghai Tantulong Outdoor Products co. LTD.
Address:	Wang Jia 1197, Xidian Town, Ninghai County, Ningbo City, Zhejiang Province, China
Prepared By:	Shenzhen BKC Testing Co., Ltd.
Address:	6/F, Building 3, Zhouteng Industrial Park, Nanwan Street, Longgang District, Shenzhen, Guangdong, China.
Report No.:	BKC-190701767R

TABLE OF CONTENT

Shenzhen BKC Testing Co., Ltd.

Applicant	:	Ninghai Tantulong Outdoor Products co. LTD.
Address	:	Wang Jia 1197, Xidian Town, Ninghai County, Ningbo City, Zhejiang Province, China
Manufacturer	:	Ninghai Tantulong Outdoor Products co. LTD.
Address	:	Wang Jia 1197, Xidian Town, Ninghai County, Ningbo City, Zhejiang Province, China
EUT	:	Multi-Function Vehicle Safety Hammer Flashlight
Model Number	:	BJ-T01
Trademark:	:	N/A
Test Date	:	Jul. 03, 2019 - Jul. 16, 2019
Date of Report	:	Jul. 16, 2019
Test Result:	:	The equipment under test was found to be compliance with the requirements of the standards applied.

Test Procedure Used:

EMI	:	EN 55015: 2013+A1:2015 EN 61000-3-2:2014, EN 61000-3-3:2013 EN 50293:2012
EMS	:	EN 61547:2009 EN 61000-4-2:2009, EN 61000-4-3:2006+A1:2008+A2:2010, EN 61000-4-4:2012, EN 61000-4-5:2014+A1:2017, EN 61000-4-6:2014, EN 61000-4-8:2010, EN 61000-4-11:2004+A1:2017

Prepared by(Test Engineer): _____

Reviewer(Supervisor): _____

Approved(Manager): _____

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Multi-Function Vehicle Safety Hammer Flashlight
Trademark	:	N/A
Model Number	:	BJ-T01
Model Difference	:	The product is different for model number and outlook color.
Power Supply	:	DC5V⎓ 10W
Work Frequency	:	Below 108MHz

Note: BJ-T01 was selected as the test model and the datas have been recorded in this report.

1.2. Tested System Details

Personal Computer	:	DELL	Monitor	:	SONY
M/N	:	INSPIRON	M/N	:	MNT1
Printer	:	EPSON STYLUS	Keyboard (USB)	:	Genuine
M/N	:	P320A	M/N	:	N/A
Modem	:	ACEEX	Mouse	:	DETROIS
M/N	:	DM-1414	M/N	:	CM309

1.3. Test Uncertainty

Conducted Emission Uncertainty	:	±2.48dB
Radiated Emission Uncertainty	:	±4.14dB

1.4. Test Facility

Site Description

Name of Firm	:	Shenzhen BKC Testing Co., Ltd.
Site Location	:	6/F, Building 3, Zhouteng Industrial Park, Nanwan Street, Longgang District, Shenzhen, Guangdong, China.

2. TEST INSTRUMENT USED

2.1 CONDUCTED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	R&S	ENV216	101313	Nov. 15, 2019
2	LISN	EMCO	3816/2	00042990	Nov. 15, 2019
3	50Ω Switch	ANRITSU CORP	MP59B	6200983704	Nov. 15, 2019
4	EMI Test Receiver	R&S	ESCI	101160	Nov. 15, 2019
5	Passive Voltage Probe	ESH2-Z3	R&S	100196	Nov. 15, 2019
6	Triple-Loop Antenna	EVERFINE	LIA-2	11020003	Nov. 15, 2019
7	Absorbing Clamp	R&S	MDS-21	100423	Nov. 15, 2019
8	Coupling/ Decoupling Network	PH	ISN T800	S1509001	Nov. 15, 2019

2.2 MAGNETIC EMISSION

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Three-loop antenna	DAZE	ZN30401	13017	Nov. 15, 2019
2	EMI Test Receiver	R&S	ESCI-7	101318	Nov. 15, 2019
3	50Ω Switch	Anritsu Corp	MP59B	6200983705	Nov. 15, 2019

2.3 RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Bilog Antenna	TESEQ	CBL6111D	31216	Nov. 15, 2019
2	EMI Test Receiver	R&S	ESCI-7	101318	Nov. 15, 2019
3	Antenna Mast	EM	SC100_1	N/A	Nov. 15, 2019
4	50Ω Switch	Anritsu Corp	MP59B	6200983705	Nov. 15, 2019
5	Spectrum Analyzer	Aglient	E4407B	MY45108040	Nov. 15, 2019
6	Horn Antenna	EM	EM-AH-10180	2011071402	Nov. 15, 2019
7	Amplifier	EM	EM-30180	060538	Nov. 15, 2019

2.4 HARMONICS AND FILCK

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Harmonic & Flicker	EM TEST	DPA500	0303-04	Nov. 15, 2019
2	AC Power Source	EM TEST	ACS500	0203-01	Nov. 15, 2019

2.5 Electrostatic Discharge

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	ESD TEST GENERATOR	EVERFINE	EMS61000-2 A-V200	11040001T	Nov. 15, 2019

2.6 RS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Signal Generator	R&S	SMT 06	832080/007	Nov. 15, 2019
2	Log-Bicon Antenna	Schwarzbeck	VULB9161	4022	Nov. 15, 2019
3	Power Amplifier	AR	150W1000M1	320946	Nov. 15, 2019
4	Microwave Horn Antenna	AR	AT4002A	321467	Nov. 15, 2019
5	Power Amplifier	AR	25S1G4A	308598	Nov. 15, 2019

2.7 SURGE, EFT/BURST, VOLTAGE INTERRUPTION/DIPS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Surge Generator	EVERFINE	EMS61000-5 A	1101002	Nov. 15, 2019
2	DIPS Generator	EVERFINE	EMS61000-11 K	1011002	Nov. 15, 2019
3	EFT/B Generator	Schaffner	MODULA615 0	34437	Nov. 15, 2019

2.8 INJECTION CURRENT

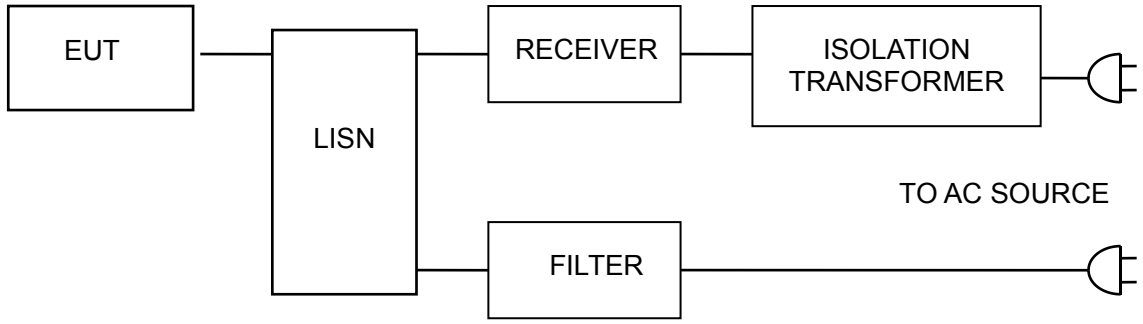
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Signal Generator	IFR	2023A	202301/368	Nov. 15, 2019
2	Power Amplifier	AR	75A250AM1	0320709	Nov. 15, 2019
3	CDN	FCC	FCC-801-M2	06043	Nov. 15, 2019
4	EM Clamp	FCC	F-203I-23MM	504	Nov. 15, 2019

2.9 Magnetic Field Immunity

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Generator	EVERFINE	EMS61000-8 K	1007001	Nov. 15, 2019

3. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

3.1. Block Diagram Of Test Setup



3.2. Test Standard

EN 55015: 2013+A1:2015

3.3. Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet EN 55015 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5. Operating Condition of EUT

3.5.1 Setup the EUT and simulators as shown in Section 3.1.
3.5.2 Turn on the power of all equipments.
3.5.3 Let the EUT work in test modes and test it.

3.6. Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the EN 55015 regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 10KHz.

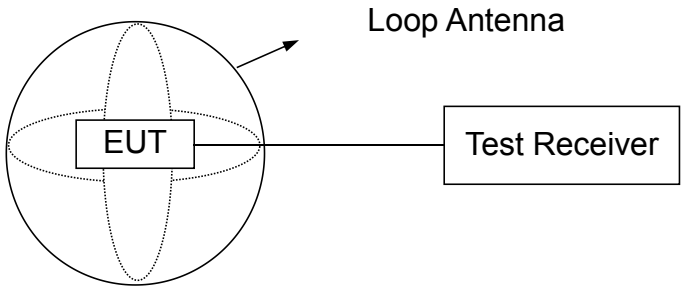
The frequency range from 150 KHz to 30 MHz is investigated.

3.7. Test Result

The product's power provide by DC, no requirement for this item.

4. MAGNETIC EMISSION TEST

4.1. Block Diagram Of Test Setup



4.2. Test Standard

EN 55015:2013+A1:2015

4.3. Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μA) Quasi-peak Level
0.009 ~ 0.07	88
0.07 ~ 0.15	88 ~ 58*
0.15 ~ 0.50	58 ~ 22*
0.50 ~ 5.00	22

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

4.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet EN55015 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

4.5. Operating Condition of EUT

4.5.1 Setup the EUT and simulators as shown in Section 4.1.
4.5.2 Turn on the power of all equipments.
4.5.3 Let the EUT work in test modes and test it.

4.6. Test Procedure

The EUT is placed on a wood table in the center of a loop antenna. The induced current in the loop antenna is measured by means of a current probe and the test receiver. Three field components is checked by means of a coax Multi-Function Vehicle Safety Hammer Flashlight.

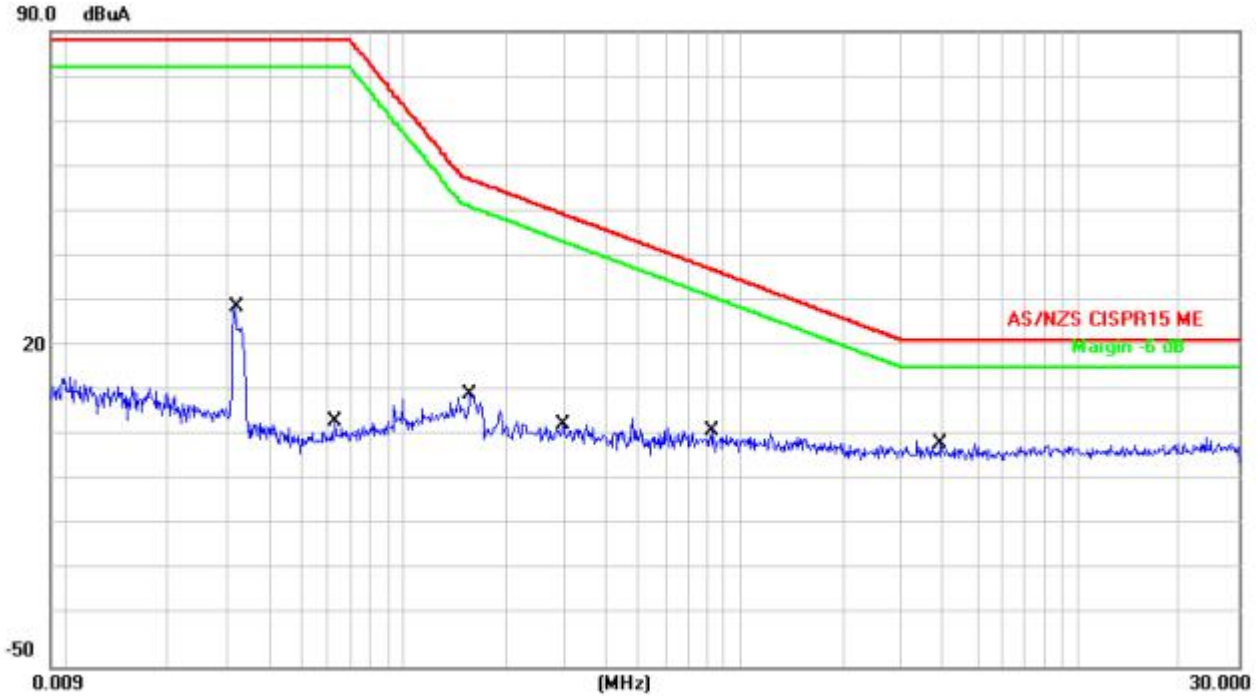
The frequency range from 9KHz to 30MHz is investigated. The receiver is measured with the quasi-peak detector. For frequency band 9KHz to 150KHz, the bandwidth of the field strength meter (R&S Test Receiver ESCI) is set at 200Hz. For frequency band 150KHz to 30MHz , the bandwidth is set at 10KHz.

4.7. Test Result

PASS

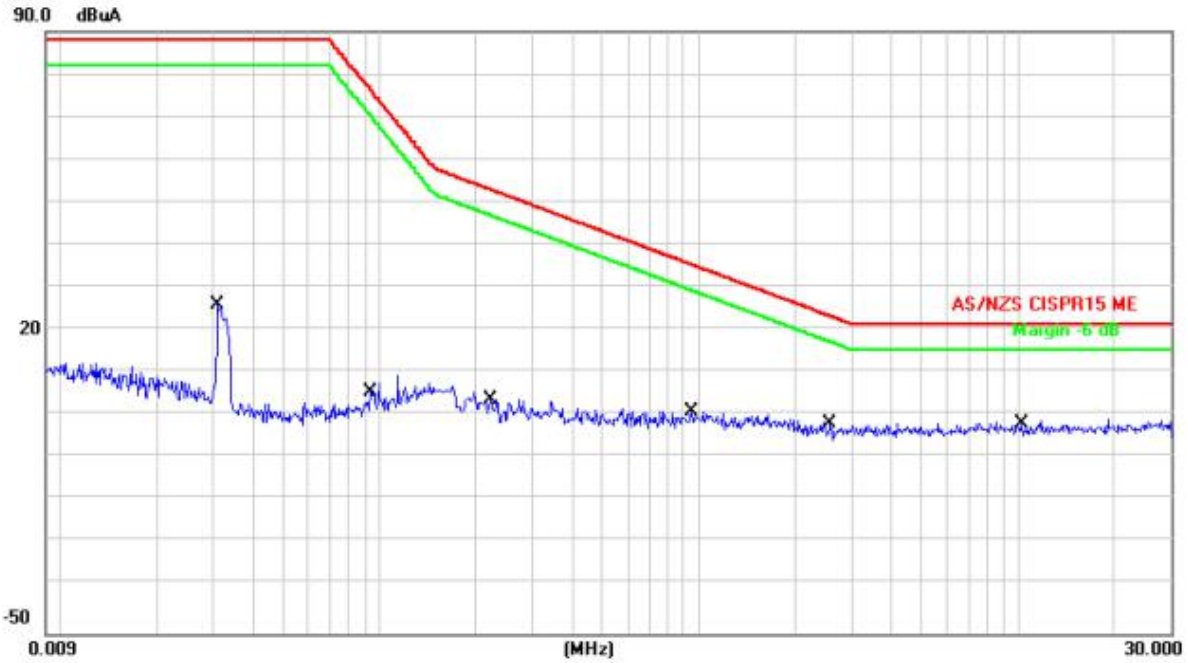
Please refer to the following page.

Magnetic Emission Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Ant. Polarity	X
Test Voltage :	DC5V	Test Mode:	ON Mode



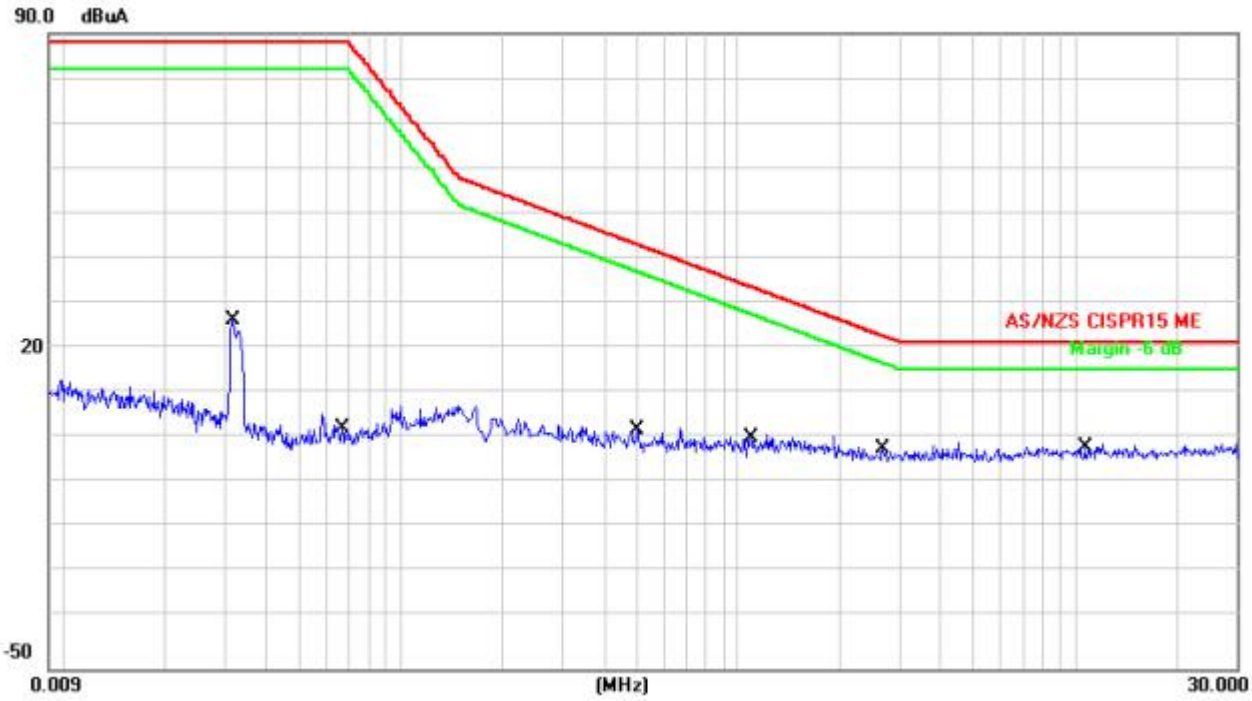
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuA	dB	dBuA	dBuA	dB	Detector	Comment
1		0.0318	6.79	22.43	29.22	88.00	-58.78	QP	
2		0.0629	-16.82	20.90	4.08	88.00	-83.92	QP	
3		0.1580	-16.96	27.00	10.04	57.38	-47.34	QP	
4		0.2980	-23.55	27.00	3.45	49.75	-46.30	QP	
5		0.8260	-25.01	27.00	1.99	37.50	-35.51	QP	
6	*	3.9340	-27.73	27.00	-0.73	22.00	-22.73	QP	

Magnetic Emission Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Ant. Polarity	Y
Test Voltage :	DC5V	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuA	dB	dBuA	dBuA	dB	Detector	Comment
1		0.0313	3.87	22.49	26.36	88.00	-61.64	QP	
2		0.0936	-16.89	23.06	6.17	76.55	-70.38	QP	
3		0.2220	-22.48	27.00	4.52	53.28	-48.76	QP	
4		0.9500	-25.27	27.00	1.73	35.82	-34.09	QP	
5		2.5780	-28.03	27.00	-1.03	23.82	-24.85	QP	
6	*	10.2460	-28.28	27.00	-1.28	22.00	-23.28	QP	

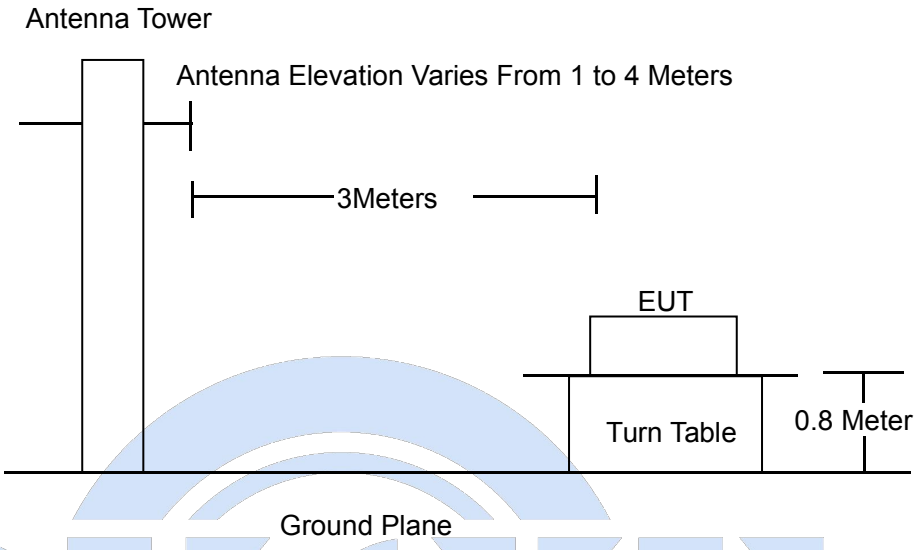
Magnetic Emission Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Ant. Polarity	Z
Test Voltage :	DC5V	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuA	dB	dBuA	dBuA	dB	Detector	Comment
1		0.0319	4.36	22.41	26.77	88.00	-61.23	QP	
2		0.0668	-17.99	21.18	3.19	88.00	-84.81	QP	
3		0.5020	-24.33	27.00	2.67	43.48	-40.81	QP	
4		1.0900	-25.97	27.00	1.03	34.16	-33.13	QP	
5		2.6820	-28.47	27.00	-1.47	23.35	-24.82	QP	
6	*	10.6940	-28.16	27.00	-1.16	22.00	-23.16	QP	

5. RADIATION EMISSION TEST

5.1. Block Diagram of Test Setup



5.2. Test Standard

EN 55015: 2013+A1:2015

5.3. Radiation Limit

Frequency MHz	Distance (Meters)	Field Strengths Limits dB(μV)/m
30 ～ 230	3	40.0
230 ～ 300	3	47.0

Remark:

(1) Emission level (dB(μV)/m) = 20 log Emission level (μV/m)

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance refers to the distance in meters between the measuring instrument, antenna and the closed point of any part of the device or system.

5.4. EUT Configuration on Test

The EN 55015 regulations test method must be used to find the maximum emission during radiated emission test.
The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.3.

5.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.3 except the test set up replaced as Section 5.1.

5.6. Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to EN 55015 on radiated emission test.
The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz below 1GHz, set at 1MHz above 1GHz
The frequency range from 30MHz to 1000MHz is checked.

5.7. Test Result

PASS
Please refer to the following page.

Radiation Emission Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Horizontal
Test Voltage :	DC5V	Test Mode:	On Mode

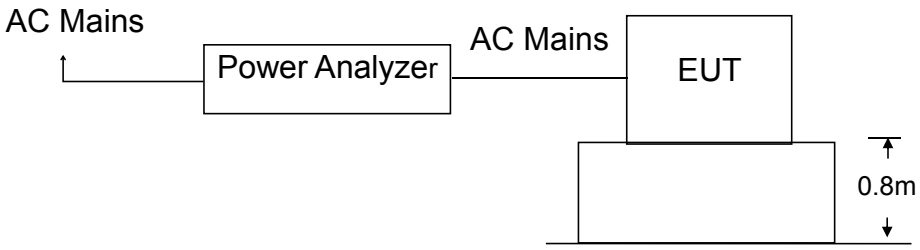
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		37.8548	33.16	-8.74	24.42	40.00	-15.58	QP			
2		65.7841	39.99	-12.83	27.16	40.00	-12.84	QP			
3		75.3566	48.23	-16.44	31.79	40.00	-8.21	QP			
4	*	104.0211	55.05	-16.11	38.94	40.00	-1.06	QP			
5		137.4425	41.46	-13.58	27.88	40.00	-12.12	QP			
6		209.4697	38.96	-15.93	23.03	40.00	-16.97	QP			

Radiation Emission Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Vertical
Test Voltage :	DC5V	Test Mode:	On Mode

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	!	37.8548	43.61	-8.74	34.87	40.00	-5.13	QP			
2	!	67.0072	47.97	-13.33	34.64	40.00	-5.36	QP			
3	*	104.0211	51.59	-16.15	35.44	40.00	-4.56	QP			
4		139.0341	39.93	-13.45	26.48	40.00	-13.52	QP			
5		170.2634	34.45	-13.47	20.98	40.00	-19.02	QP			
6		212.3837	34.83	-15.85	18.98	40.00	-21.02	QP			

6. HARMONIC CURRENT EMISSION TEST

6.1. Block Diagram of Test Setup



6.2. Test Standard

EN 61000-3-2:2014

6.3. Operating Condition of EUT

6.3.1 Setup the EUT as shown in Section 6.1.

6.3.2 Turn on the power of all equipments.

6.3.3 Let the EUT work in test mode and test it.

6.4. Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

6.5. Test Results

The product's power provide by DC, no requirement for this item.

7. VOLTAGE FLUCTUATIONS & FLICKER TEST

7.1. Block Diagram of Test Setup

Same as Section 6.1..

7.2. Test Standard

EN 61000-3-3:2013

7.3. Operating Condition of EUT

Same as Section 6.3.. The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

Flicker Test Limit

Test items	Limits
Pst	1.0
dc	3.3%
dmax	4.0%
dt	Not exceed 3.3% for 500ms

7.4. Test Procedure

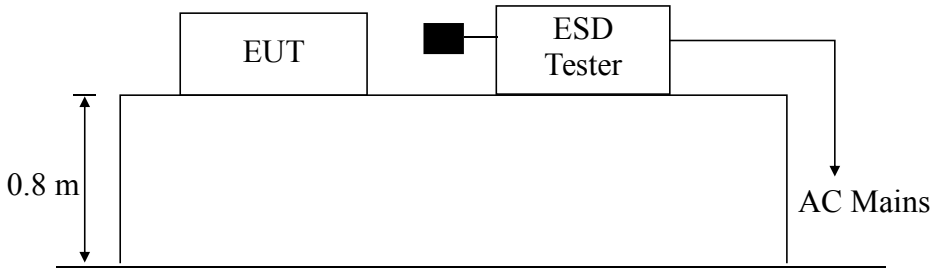
The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

7.5. Test Results

The product's power provide by DC, no requirement for this item.

8. ELECTROSTATIC DISCHARGE IMMUNITY TEST

8.1. Block Diagram of Test Setup



8.2. Test Standard

EN 61547:2009, EN 61000-4-2:2009

Severity Level: 3 / Air Discharge:±8KV
Level: 2 / Contact Discharge:±4KV

8.3. Severity Levels and Performance Criterion

8.3.1 Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

8.3.2 Performance criterion : B

A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

8.4. EUT Configuration

The following equipments are installed on Electrostatic Discharge Immunity test to meet EN 61547:2009, EN 61000-4-2:2009, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test.
Please refer to Section 2.5.

8.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.5 except the test setup replaced by Section 8.1.

8.6. Test Procedure

8.6.1 Air Discharge**:**

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

8.6.2 Contact Discharge**:**

All the procedure shall be same as Section 8.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge Switch is operated.

8.6.3 Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

8.6.4 Indirect discharge for vertical coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are complete illuminated.

8.7.Test Results

PASS

Please refer to the following page.

ESD Test Data			
Temperature:	25.1℃	Humidity:	54%
Power Supply :	DC5V	Test Mode:	On

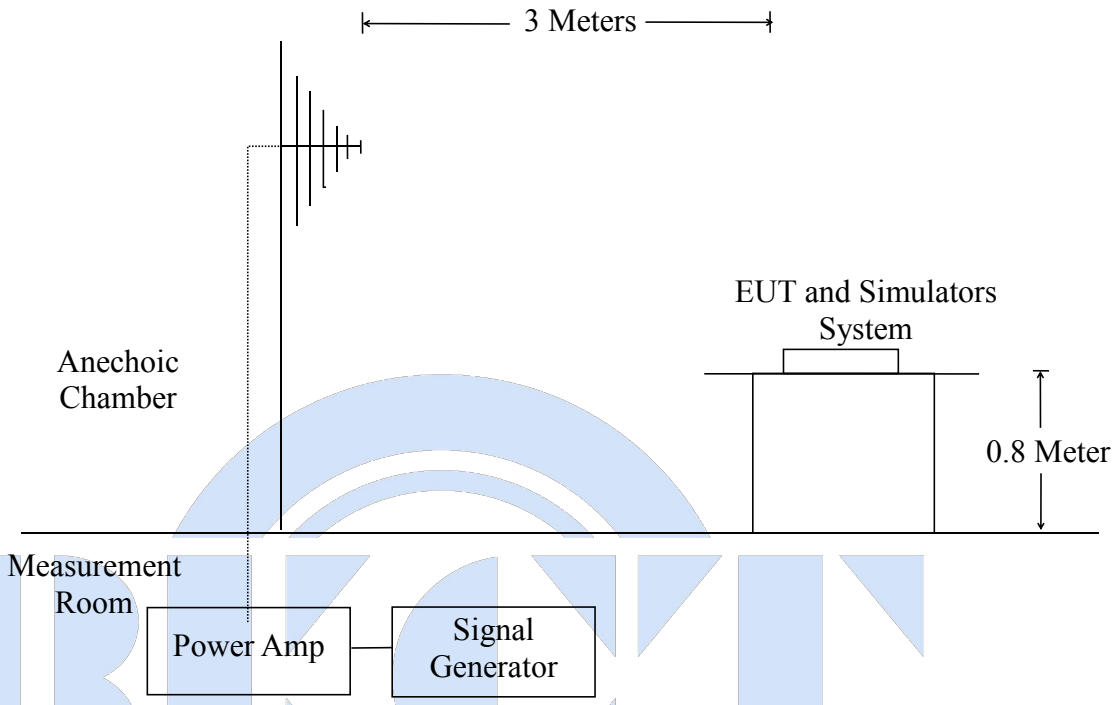
Air Discharge: ± 8KV
Contact Discharge: ± 4KV
For each point positive 25 times and negative 25 times discharge

Test Points	Air Discharge	Contact Discharge	Performance Criterion	Result
Enclosure	N/A	±2,4 KV	B	PASS
Slit	N/A	±2,4 KV	B	PASS
VCP	N/A	±2,4 KV	B	PASS
HCP	N/A	±2,4 KV	B	PASS

Note: N/A

9. RF FIELD STRENGTH SUSCEPTIBILITY TEST

9.1. Block Diagram of Test Setup



9.2. Test Standard

EN 61547:2009, EN 61000-4-3: 2006+A1:2008+A2:2010
Severity Level 2, 3V / m

9.3. Severity Levels and Performance Criterion

9.3.1. Severity level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

9.3.2. **Performance criterion: A**

A、 The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B、 The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C、 Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

9.4. EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet EN 61547:2009, EN 61000-4-4:2012, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test.
Please refer to Section 3.4.

9.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 2.6 except the test setup replaced by Section 9.1.

9.6. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.

All the scanning conditions are as follows :

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80 – 1000 MHz
4. Dwell time of radiated	0.0015 decade/s
5. Waiting Time	1 Sec.

9.7. Test Results

PASS

Please refer to the following page.

R/S Test Data			
Temperature : 25.1℃		Humidity : 53%	
Field Strength: 3 V/m		Criterion: A	
Power Supply: DC5V		Frequency Range: 80 MHz to 1000 MHz	
Modulation: ☑ AM ☐ Pulse ☐none 1 KHz 80%			
Test Mode : On			
	Frequency Range : 80-1000MHz		
Steps	1 %		
	Horizontal	Vertical	Result
Front	A	A	Pass
Right	A	A	Pass
Rear	A	A	Pass
Left	A	A	Pass
Note: N/A			

10. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

10.1. Block Diagram of EUT Test Setup

10.2. Test Standard

EN 61547:2009, EN 61000-4-4:2012

10.3. Severity Levels and Performance Criterion

Severity Level 2 at 1KV, Pulse Rise time & Duration: 5 nS / 50 nS
Severity Level:

Open Circuit Output Test Voltage ±10%		
Level	On power ports	On I/O(Input/Output) Signal data and control ports
1.	0.5KV	0.25KV
2.	1KV	0.5KV
3.	2KV	1KV
4.	4KV	2KV
X.	Special	Special

Performance criterion: B

A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

10.4. EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet EN 61547:2009, EN 61000-4-4:2012, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test.
Please refer to Section 3.4.

10.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 2.7 except the test setup replaced by Section 10.1.

10.6. Test Procedure

EUT shall be placed 0.8m high above the ground reference plane which is a min.1m*1m metallic sheet with 0.65mm minimum thickness. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m

10.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minutes.

10.7. Test Results

The product's power provide by DC, no requirement for this item.

11. SURGE TEST

11.1. Block Diagram of EUT Test Setup

11.2. Test Standard

EN 61547:2009, EN61000-4-5:2014

11.3. Severity Levels and Performance Criterion

Severity Level: Line to Line, Level 2 at 1KV;
Severity Level: Line to Earth, Level 3 at 2KV.

Severity Level	Open-Circuit Test Voltage (KV)
1.	0.5
2.	1.0
3.	2.0
4.	4.0
X.	Special

Performance criterion: B

A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

11.4. EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet EN 61547:2009, EN61000-4-5:2014, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.4.

11.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 2.7 except the test setup replaced by Section 11.1.

11.6. Test Procedure

1) Set up the EUT and test generator as shown on section 10.1
2) For line to line coupling mode, provide a 1KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
4) Different phase angles are done individually.
5) Repeat procedure 2) to 4) except the open-circuit test voltage change from 1KV to 2KV for line to earth coupling mode test.
6) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

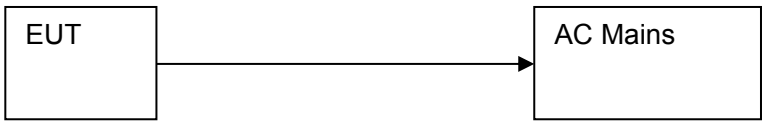
11.7. Test Result

The product's power provide by DC, no requirement for this item.

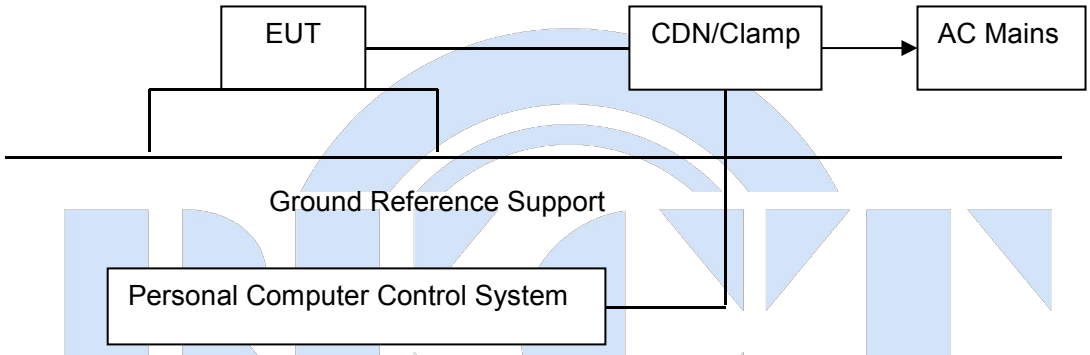
12. INJECTED CURRENTS SUSCEPTIBILITY TEST

12.1. Block Diagram of EUT Test Setup

11.1.1. Block Diagram of EUT Test Setup



11.1.2. Block Diagram of Test Setup



12.2. Test Standard

EN 61547:2009, EN61000-4-6:2014

12.3. Severity Levels and Performance Criterion

Severity Level 2: 3V(rms), 150KHz ～ 80MHz
Severity Level:

Level	Field Strength V
1.	1
2.	3
3.	10
X.	Special

Performance criterion: A

A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

12.4. EUT Configuration on Test

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.7.

12.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.8 except the test set up replaced as Section 12.1.

12.6. Test Procedure

1) Set up the EUT, CDN and test generator as shown on section 12.1

2) Let EUT work in test mode and measure.

3) The EUT and supporting equipments are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane at above 0.1-0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).

4) The disturbance signal described below is injected to EUT through CDN.

5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.

6) The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave

7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

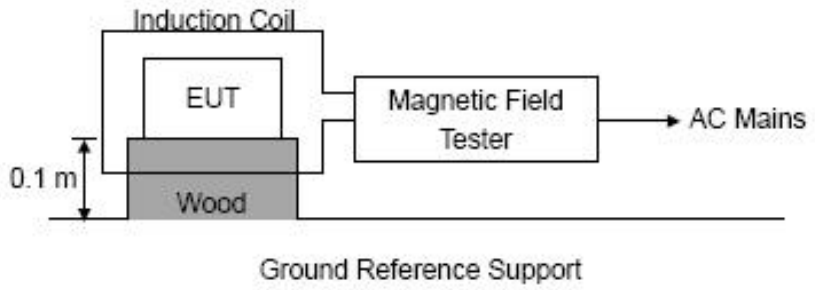
8) Recording the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

12.7. Test Result

The product's power provide by DC, no requirement for this item.

13. MAGNETIC FIELD IMMUNITY TEST

13.1. Block Diagram of Test Setup



13.2. Test Standard

EN 61547:2009, EN61000-4-8:2010
Severity Level 1 at 1A/m

13.3. Severity Levels and Performance Criterion

13.3.1 Severity level

Level	Magnetic Field Strength A/m
1.	1
2.	3
3.	10
4.	30
5.	100
X.	Special

13.3.2 Performance criterion: B

A. The apparatus shall continue to operate as intended during and after the test.
B. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
C. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

D. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

13.4. EUT Configuration on Test

The configuration of EUT is listed in Section 2.9.

13.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.9 except the test set up replaced as Section 13.1.

13.6. Test Procedure

The EUT shall be subjected to the test magnetic field by using the induction coil of standard dimensions (1m*1m) and shown in Section 13.1. The induction coil shall then be rotated by 90° in order to expose the EUT to the test field with different orientations.

13.7. Test Results

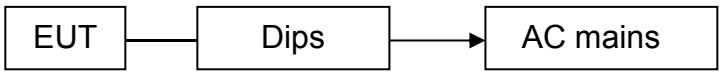
PASS

Please refer to the following page.

MS Test Data					
Temperature:	24.5℃		Humidity:	53%	
Power Supply：	DC5V		Test Mode:	On	
Environmental Phenomena	Test specification	Units	Coil Orientation	Performance Criterion	Result
Magnetic Field	1	A/m	X	A	PASS
			Y	A	PASS
			Z	A	PASS
Note: N/A					

14. VOLTAGE DIPS AND INTERRUPTIONS TEST

14.1. Block Diagram of EUT Test Setup



14.2. Test Standard

EN 61547:2009, EN61000-4-11:2004

14.3. Severity Levels and Performance Criterion

Severity Level:

Input and Output AC Power Ports.

☑ Voltage Dips.

☑ Voltage Interruptions.

Environmental Phenomena	Test Specification	Units	Performance Criterion
Voltage Dips	>95 0.5	% Reduction period	B
	30 25	% Reduction period	C
Voltage Interruptions	>95 250	% Reduction period	C

Performance criterion: B, C, C

A. The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

B. The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

C. Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

14.4. EUT Configuration on Test

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.7.

14.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.7 except the test set up replaced as Section 14.1.

14.6. Test Procedure

1) Set up the EUT and test generator as shown on section 14.1
2) The interruption is introduced at selected phase angles with specified duration. There is a 3mins minimum interval between each test event.
3) After each test a full functional check is performed before the next test.
4) Repeat procedures 2 & 3 for voltage dips, only the level and duration is changed.
5) Record any degradation of performance.

14.7. Test Result

The product's power provide by DC, no requirement for this item.

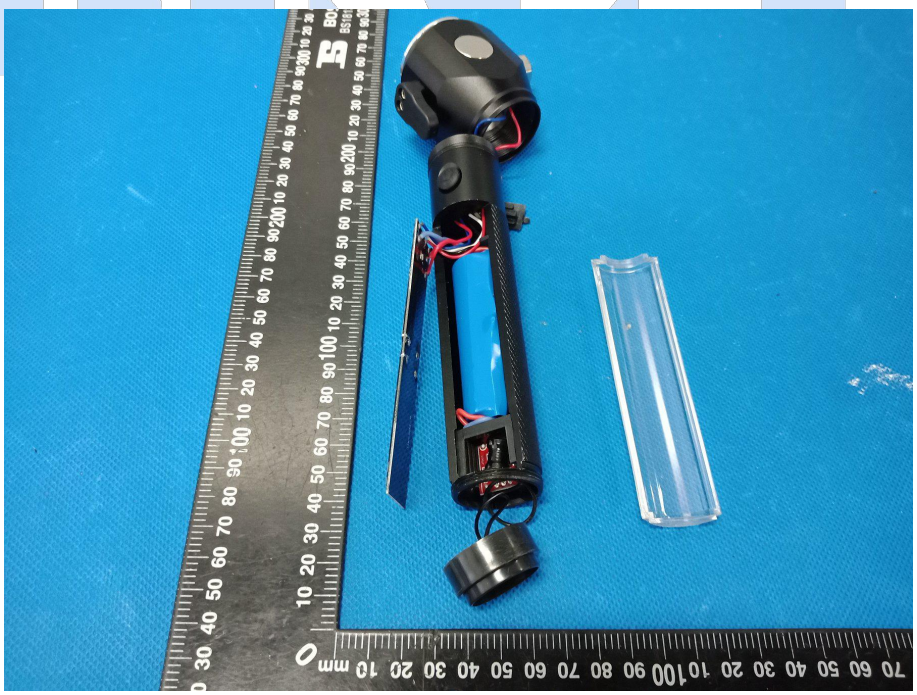
15. EUT PHOTOGRAPHS

EUT Photo 1

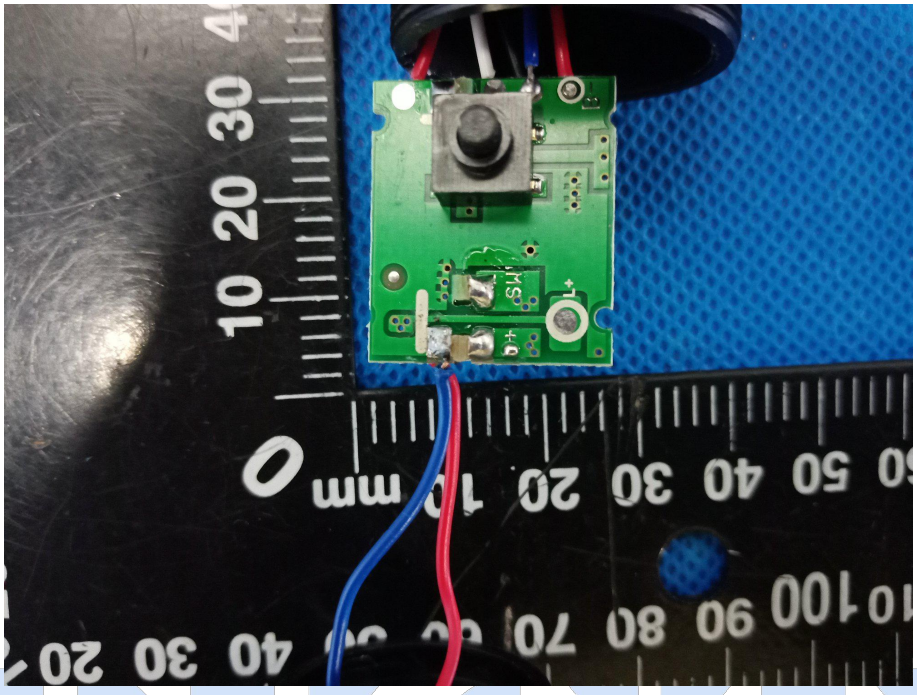
EUT Photo 2

EUT Photo 3

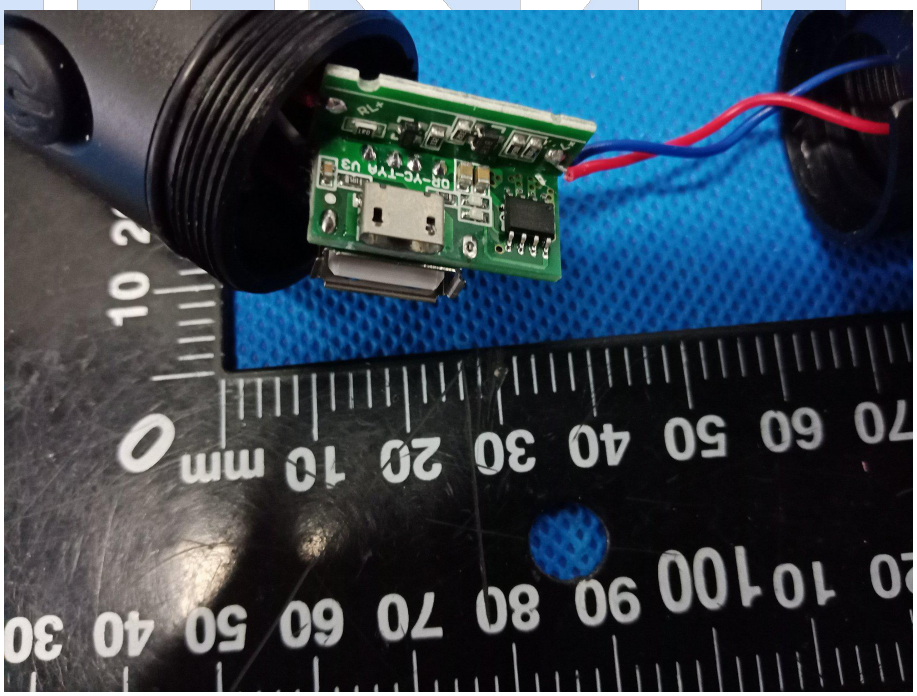
EUT Photo 4



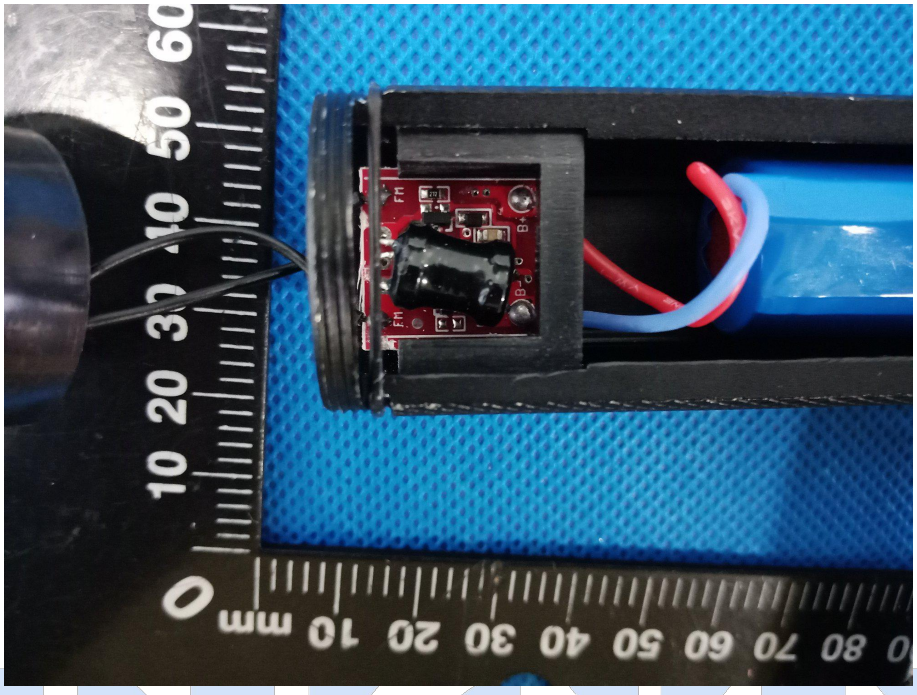
EUT Photo 5



EUT Photo 6



EUT Photo 7



※※※※※ **END OF REPORT** ※※※※※