



APPLICATION FOR ELECTROMAGNETIC COMPATIBILITY DIRECTIVE

On Behalf of

IMAKE INTERNATIONAL CO., LTD.

SMOKE DETECTOR

Model No.: SD-810, SD-816, SD-817, SD-818, SD-819,
SD-820, SD-830, SD-840, SD-850, SD-98-4C

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TEST REPORT DECLARATION

Applicant : IMAKE INTERNATIONAL CO., LTD.

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Manufacturer : Shenzhen Usafe Intelligent Technology Co., Ltd

Address : 5th Floor, Building 3, Baolaite Industrial Park, No. 24Xinbu Road,
Tongle, Longgang District, Shenzhen, China

EUT Description : SMOKE DETECTOR

(A) Model No. : SD-810, SD-816, SD-817, SD-818, SD-819,
SD-820, SD-830, SD-840, SD-850, SD-98-4C

(B) Trademark : N/A

Measurement Standard Used:

EN 50130-4: 2011+A1:2014

EN IEC 61000-3-2:2019

EN 61000-3-3:2013+A1:2019

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the EN 50130-4 requirements.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....: John Han
Project Engineer

Approved by (name + signature).....: Simple Guan
Project Manager

Date of issue.....: March 9, 2021



Revision History

Revision	Issue Date	Revisions	Revised By
V0	March 9, 2021	Initial released Issue	John Han

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

IMMUNITY (EN 50130-4: 2011 + A1:2014)				
Description of Test Item	Standard	Performance Criteria	Observation Criteria	Results
Electrostatic discharge (ESD)	EN 50130-4: 2011 + A1:2014	A	A	P
Radio-frequency, Continuous radiated disturbance	EN 50130-4: 2011 + A1:2014	A	A	P
Electrical fast transient (EFT)	EN 50130-4: 2011 + A1:2014	A	A	P
Surge (Input a.c. power port)	EN 50130-4: 2011 + A1:2014	A	A	P
Surge(Telecommunication port)		N/A	N/A	N/A
Radio-frequency, Continuous conducted disturbance	EN 50130-4: 2011 + A1:2014	A	A	P
Power frequency magnetic field	EN 50130-4: 2011 + A1:2014	N/A	N/A	N/A
Voltage dips, 100% reduction	EN 50130-4: 2011 + A1:2014	A	N/A	N/A
Voltage dips, 20% reduction		A	N/A	N/A
Voltage dips, 30% reduction		A	N/A	N/A
Voltage dips, 60% reduction		A	N/A	N/A
Note: 1. P is an abbreviation for Pass. 2. F is an abbreviation for Fail. 3. N/A is an abbreviation for Not Applicable.				

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Description : SMOKE DETECTOR

Model Number : SD-810, SD-816, SD-817, SD-818, SD-819, SD-820, SD-830, SD-840,
SD-850, SD-98-4C

Diff : There is no difference except the name of the model. All tests are made
with the YA-S817 model.

Highest frequency : Less than 108MHz

Test Voltage : DC 24V From DC Power

Trademark : N/A

EUT information : Input voltage : DC 24V

Software version : N/A

Hardware version : N/A

Nota : This report is based on report A1911276-C01-R01. The new models in
Co-license are the same as original models mentioned in test report
A1911276-C01-R01 respectively except for license holder "IMAKE
INTERNATIONAL CO., LTD", no further test need.

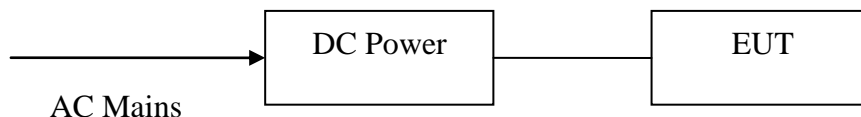
Sample Type : Prototype production

2.2. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number
1.	DC Power	JUNKE	JK12010S	20140927-6

2.3. Block Diagram of connection between EUT and simulators

Working Mode



Signal Cable Description of the above Support Units					
No.	Port Name	Cable	Length	Shielded (Yes or No)	Detachable (Yes or No)
(a)	N/A	N/A	N/A	N/A	N/A

EUT: Smoke Detector

2.4. Test Mode Description

For EMS Tests		
No.	Test Mode	Test Voltage
1.	Working	DC 24V From DC Power

2.5. Test Facility

Shenzhen Alpha Product Testing Co., Ltd.

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103, Shenzhen, Guangdong, China

2.6. Measurement Uncertainty

Item	MU	Remark
Uncertainty for Conducted Emission Test	2.74dB	
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.77dB	Polarize: V
	3.80dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	4.16dB	Polarize: H
	4.13dB	Polarize: V
Uncertainty for radio frequency	5.4×10^{-8}	
Uncertainty for conducted RF Power	0.37dB	

3. IMMUNITY PERFORMANCE CRITERIA

Performance Level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level by its manufacturer or the requestor of the test, or the agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level:

1. Based on the used product standard
2. Based on the declaration of the manufacturer, requestor or purchaser

Performance criterion A

There shall be no damage, malfunction or change of status due to the different supply voltage conditions.

Power frequency magnetic field test

For CRT monitors, the following also applies:

The jitter shall be measured using a measuring microscope as specified in 6.6.14 of ISO 9241-3.

The jitter (in mm) shall not exceed the value $\frac{(\text{character height in mm} + 0,3) \times 2,5}{33,3}$ when the CRT

monitor is immersed in a continuous magnetic field of 1A/m (r.m.s.) at one of the power frequencies of 50Hz.

Alternatively, a field of 50A/m may be applied, and a transparent graduated mask used to assess the jitter. In that case, the jitter shall not exceed 50 times the value in the above formula.

NOTE-This test level is used to simplify the measurement of jitter. Lesser values of the test level may be used if non-linearity is experienced, due to, for example, saturation of screening material.

The EUT shall be tested in two positions, both perpendicular to the magnetic field.

Performance criterion B

Screen disturbances during the application of the test are permissible.

Performance criterion C

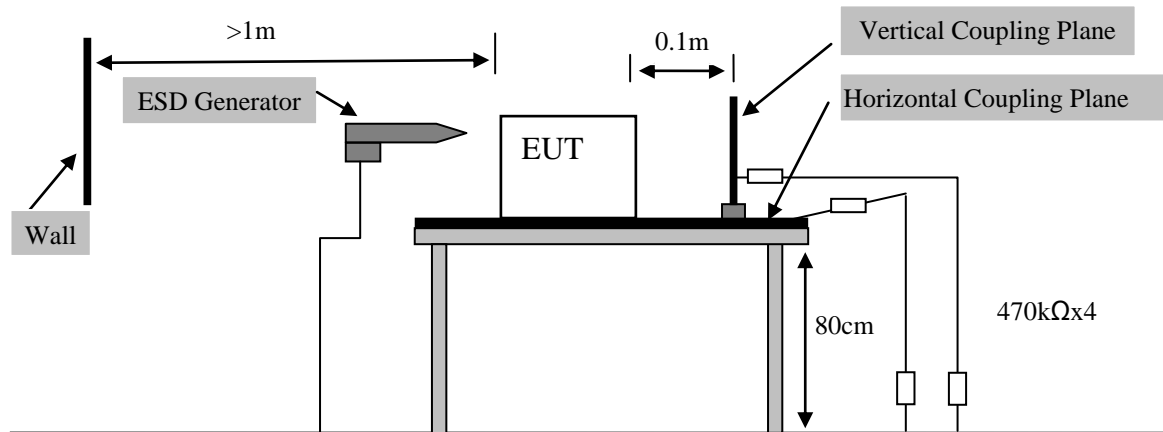
Failures which are not self-recovered after removal of the external disturbance, but which can be recovered to normal operation by reset or reboot are permissible.

4. ELECTROSTATIC DISCHARGE TEST

4.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	ESD Tester	HAEFELY	PESD1610	H310546	2019.09.12	1 Year

4.2. Block Diagram of Test Setup



4.3. Electrostatic Discharge Test Limits

Test Type	Test Level	Performance Criterion
Air Discharge	2, 4, 8KV	A
Contact Discharge	6KV	A

Notes: 1. Test set-up reference IEC 61000-4-2:2008

4.4.Configuration of EUT on Test

The following equipment are installed on Electrostatic Discharge Test to meet the IEC 61000-4-2 requirements and operating regulations in a manner that tends to maximize its emission characteristics in normal application.

4.5.Operating Condition of EUT

- (1) Setup the EUT as shown as Section 8.2.
- (2) Turn on the power of all equipment.
- (3) Let the EUT work in test mode and 15 minutes before taking the test.

4.6.Test Procedure

(1) Air Discharge:

The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 20 times (10 with positive and 10 negative with positive) for each pre-selected test point. This procedure was repeated until all the air discharge completed.

(2) Contact Discharge:

All the procedure was same as Section 8.6.1. Except that the generator was re-triggered for a new single discharge and repeated 20 times for each pre-selected test point. The tip of the discharge electrode was touching the EUT before the discharge switch was operated.

(3) Indirect discharge for horizontal coupling plane:

At least 20 single discharges (10 with positive and 10 negative with positive) were applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

(4) Indirect discharge for vertical coupling plane:

At least 20 single discharge (10 with positive and 10 negative with positive) were applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

4.7.Electrostatic Discharge Test Results

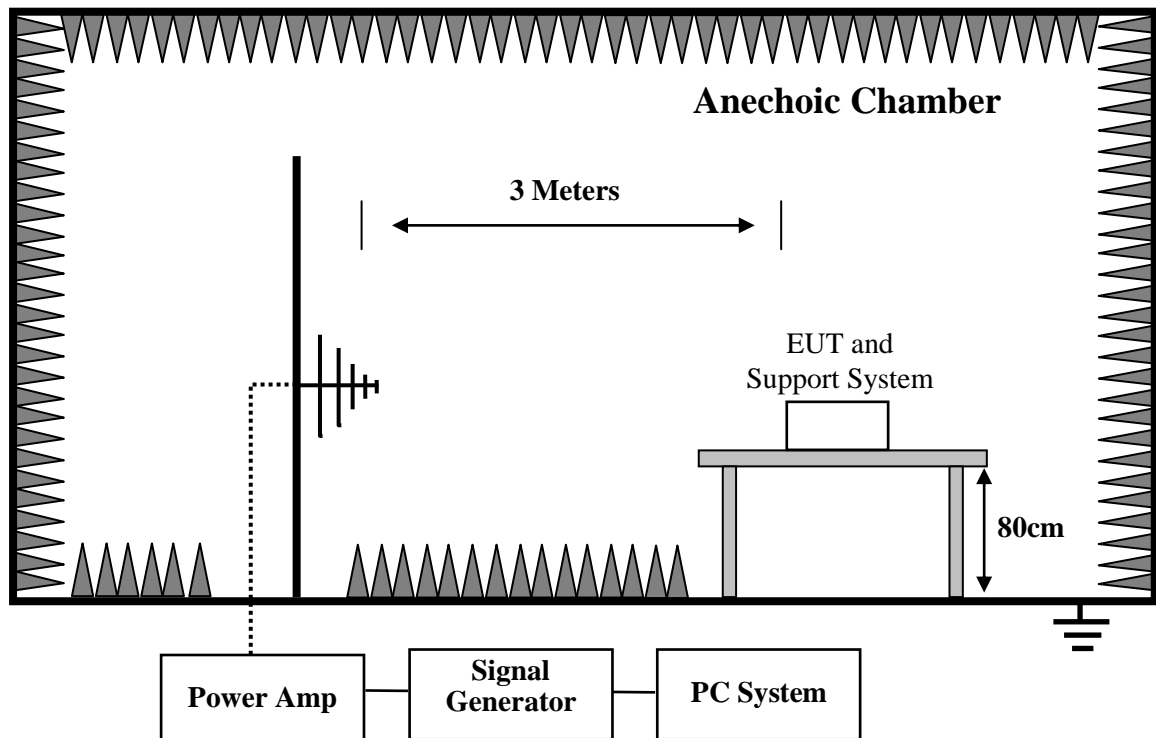
EUT : Smoke Detector			Test Date : 2019.12.05	
M/N : YA-S817			Temperature : 24℃	
Test Engineer : Ben Sun			Humidity : 56%	
Test Voltage		DC 24V From DC Power	Pressure : 101.6Kpa	
Test Mode : Working				
Test Results : PASS				
Discharge Voltage (kV)	Type Of Discharge	Dischargeable Points	Performance	
			Required	Observation
±6	Contact	N/A	A	N/A
±2	Air	1	A	A
±4	Air	1	A	A
±8	Air	1	A	A
±6	HCP-Bottom	Edge of the HCP	A	A
±6	VCP-Front	Center of the VCP	A	A
±6	VCP-Left	Center of the VCP	A	A
±6	VCP-Back	Center of the VCP	A	A
±6	VCP-Right	Center of the VCP	A	A
Discharge Points Description				
<u>1</u>	Gap		<u>4</u>	/
<u>2</u>	/		<u>5</u>	/
<u>3</u>	/		<u>6</u>	/
Note:	1. For the time interval between successive single discharges an initial value of one second. 2. For Air Discharge each Point Positive 10 times and negative 10 times discharge. 3.EUT is pure plastic shell, so is not apply to contact discharge. 4. For Contact Discharge each point positive 10 times and negative 10 times discharge. Class A is no function loss.			

5. RF FIELD STRENGTH SUSCEPTIBILITY TEST

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	vector Signal Generator	Agilent	E4438C	US44271917	2019.09.06	1 Year
2.	Power meter	Agilent	E4419B	GB40202122	2019.09.06	1 Year
3.	Power Sensor	Agilent	E9300A	MY41496625	2019.09.06	1 Year
4.	RF power Amplifier	OPHIR	5225R	1045	N/A	NCR
5.	RF power Amplifier	OPHIR	5273R	1018	N/A	NCR
6.	Antenna	SCHWARZBECK	STLP9128E-special	STLP9128Es#139	N/A	NCR
7.	Antenna	SCHWARZBECK	STLP9128E-special	STLP 9149 #456	N/A	NCR

5.2. Block Diagram of Test Setup



5.3.RF Field Strength susceptibility Test Limits

Test Specifications	Test Level	Performance Criterion
80MHz-2.7GHz	10V/m (r.m.s.)	A

Notes: 1. Test set-up reference IEC 61000-4-3:2006 + A1:2007 + A2:2010

5.4.Configuration of EUT on Test

The following equipment are installed on Electrostatic Discharge Test to meet the IEC 61000-4-3 requirements and operating regulations in a manner that tends to maximize its emission characteristics in normal application.

5.5.Operating Condition of EUT

- (1) Setup the EUT as shown as Section 9.2.
- (2) Turn on the power of all equipment.
- (3) Let the EUT work in test mode and 15 minutes before taking the test.

5.6.Test Procedure

- (1) Testing was performed in a Fully anechoic chamber as recommended by IEC 61000-4-3. The EUT was placed on an 80 cm high non-conductive table located in the area of field uniformity. The radiating antenna was placed 3m in front of the EUT and Support system, and dwell time of the radiated interference was controlled by an automated, computer-controlled system.
- (2) The signal source was stepped through the applicable frequency range at a rate no faster than 1% of the fundamental. The signal was amplitude modulated 80% over the frequency range 80 MHz to 1GHz & 1.4GHz to 2GHz at a level of 3 V/m. The signal
- (3) was amplitude modulated 80% over the frequency range 2GHz to 2.7GHz at a level of 1 V/m The dwell time was set at 3 s. Field presence was monitored during testing via a field probe placed in close proximity to the EUT.
- (4) Throughout testing, the EUT was closely monitored for signs of susceptibility. The test was performed with the antennae oriented in both a horizontal and vertical polarization.
- (5) All the scanning conditions are as follows:

Condition of Test	Require of Test
Test Fielded Strength	10 V/m
Radiated Signal	80% amplitude modulated with a 1kHz sine wave
Scanning Frequency	80 - 1000 MHz, 1.4GHz-2GHz, 2GHz-2.7GHz
Sweeping time of radiated	0.0015 decade/s
Dwell Time	3 Sec.

5.7.RF Field Strength Susceptibility Test Results

EUT	: Smoke Detector	Test Date	: 2019.12.05		
M/N	: YA-S817	Temperature	: 24°C		
Test Engineer	: Ben Sun	Humidity	: 56 %		
Test Voltage	DC 24V From DC Power	Pressure	: 101.6Kpa		
Frequency Range	: 80 MHz -1000MHz, 1.4GHz – 2GHz	Field Strength	: 10V/m		
Test Mode	: Working				
Test Results	: PASS				
Modulation:	<input checked="" type="checkbox"/> AM	<input type="checkbox"/> Pulse	<input type="checkbox"/> none 1 kHz 80%		
	Frequency Range :80 MHz -1000MHz 1.4GHz-2GHz				
Steps	1%				
	Horizontal		Vertical	Result	
	Required	Observation	Required	Observation	(Pass / Fail)
Front	A	A	A	A	Pass
Right	A	A	A	A	Pass
Rear	A	A	A	A	Pass
Left	A	A	A	A	Pass
Remark: Class A is no function loss					

5.8.RF Field Strength Susceptibility Test Results

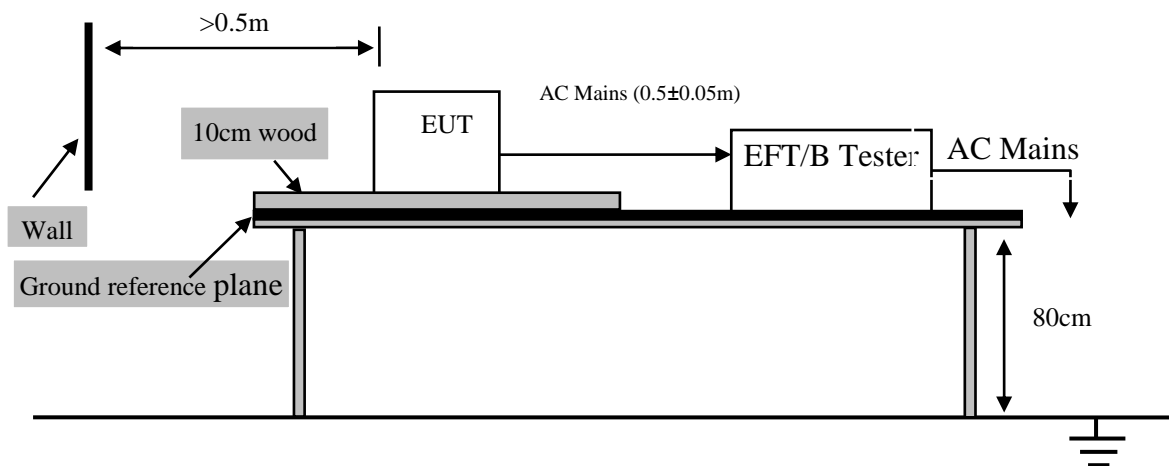
EUT	: Smoke Detector	Test Date	: 2019.12.05		
M/N	: YA-S817	Temperature	: 24°C		
Test Engineer	: Ben Sun	Humidity	: 56 %		
Test Voltage	DC 24V From DC Power	Pressure	: 101.6Kpa		
Frequency Range	: 2GHz-2.7GHz	Field Strength	: 10V/m		
Test Mode	: Working				
Test Results	: PASS				
Modulation:	<input checked="" type="checkbox"/> AM	<input type="checkbox"/> Pulse	<input type="checkbox"/> none 1 kHz 80%		
	Frequency Range :2GHz -2.7GHz				
Steps	1%				
	Horizontal		Vertical	Result	
	Required	Observation	Required	Observation	(Pass / Fail)
Front	A	A	A	A	Pass
Right	A	A	A	A	Pass
Rear	A	A	A	A	Pass
Left	A	A	A	A	Pass
Remark: Class A is no function loss					

6. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Multifunctional Compact Immunity Test system	3ctest	CCS 600	ES0801655	2019.09.05	1 Year
2.	Surge&EFT Coupling Decoupling Network	3ctest	SEPN 3832T	ES0951601	2019.09.05	1 Year
3.	Voltage variation and PF magnetic field regulating device	3ctest	VMT2216S	ES0441601	2019.09.06	1 Year
4.	Capacitive Coupling Clamp	3ctest	CCC 100	EC0441660	2019.09.05	1 Year

6.2. Block Diagram of Test Setup



6.3.Electrical Fast Transient/Burst Test Limits

Test Specifications	Test Level	Performance Criterion
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X	Special	Special

Notes: 1. Test set-up reference IEC 61000-4-4:2012

6.4.Configuration of EUT on Test

The following equipment are installed on Electrostatic Discharge Test to meet the IEC 61000-4-4 requirements and operating regulations in a manner that tends to maximize its emission characteristics in normal application.

6.5.Operating Condition of EUT

- (1) Setup the EUT as shown as Section 10.2.
- (2) Turn on the power of all equipment.
- (3) Let the EUT work in test mode and 15 minutes before taking the test.

6.6.Test Procedure

The EUT and its simulators were placed on the ground reference plane and were insulated from it by a wood support 0.1m + 0.01m thick. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness. This reference ground plane was project

- (1) 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 was more than 0.5m. All cables to the EUT was placed on the wood support, cables not subject to EFT/B was routed as far as possible from the cable under test to minimize the coupling between the cables.

10.6.1. For input and AC power ports:

The EUT was connected to the power mains by using a coupling device that couples the EFT interference signal to AC power lines. Both positive transients and negative transients of test voltage were applied during compliance test and the duration of the test can't less than 1min.

10.6.2. For signal lines and control lines ports:

It's unnecessary to test.

10.6.3. For DC input and DC output power ports:

It's unnecessary to test.

6.7.Electrical Fast Transient/Burst immunity Test Results

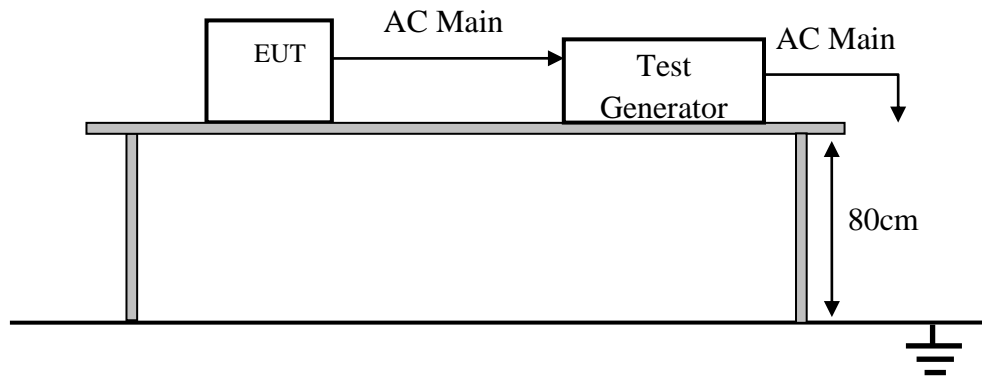
EUT	: Smoke Detector	Test Date	: 2019.12.05		
M/N	: YA-S817	Temperature	: 24°C		
Test Engineer	: Ben Sun	Humidity	: 56 %		
Test Voltage	: DC 24V From DC Power	Pressure	: 101.6Kpa		
Test Mode	: Working				
Test Results	: PASS				
Repetition Frequency : <u>100 kHz</u> Burst Duration : <u>15ms</u> Burst Period: <u>300ms</u>					
Inject Time(s): <u>60s</u> Inject Method: <u>Clamp</u>					
Inject Line: <input type="checkbox"/> AC Mains <input checked="" type="checkbox"/> DC Supply <input type="checkbox"/> Signal					
Line	Test Voltage	Performance			Result
		Required	Observation(+)	Observation(-)	(Pass/Fail)
L	2kV	/	/	/	/
N	2kV	/	/	/	/
L-N	2kV	/	/	/	/
L-PE	2kV	/	/	/	/
N-PE	2kV	/	/	/	/
L-N-PE	2kV	/	/	/	/
DC Power Line	1K	B	A	A	Pass
Note: 1. Class A is no function loss.					

7. Surge Test

7.1.Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Multifunctional Compact Immunity Test system	3ctest	CCS 600	ES0801655	2019.09.05	1 Year
2.	Surge&EFT Coupling Decoupling Network	3ctest	SEPN 3832T	ES0951601	2019.09.05	1 Year
3.	Voltage variation and PF magnetic field regulating device	3ctest	VMT2216S	ES0441601	2019.09.06	1 Year
4.	Capacitive Coupling Clamp	3ctest	CCC 100	EC0441660	2019.09.05	1 Year

7.2.Block Diagram of Test Setup



7.3.Surge Test Limits

Severity Level	Open-Circuit Test Voltage (kV)
1	0.5
2	1
3	2
4	4
*	Special

Notes: 1. Test set-up reference IEC 61000-4-5:2014

7.4.Configuration of EUT on Test

The following equipment are installed on Electrostatic Discharge Test to meet the IEC 61000-4-5 requirements and operating regulations in a manner that tends to maximize its emission characteristics in normal application.

7.5.Operating Condition of EUT

- (1) Setup the EUT as shown as Section 11.2.
- (2) Turn on the power of all equipment.
- (3) Let the EUT work in test mode and 15 minutes before taking the test.

7.6.Test Procedure

- (1) 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, and for active line / neutral lines to ground are same except test level is 2kV.
- (2) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are applied during test.
- (3) Different phase angles are done individually.
- (4) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

7.7.Surge Test Results

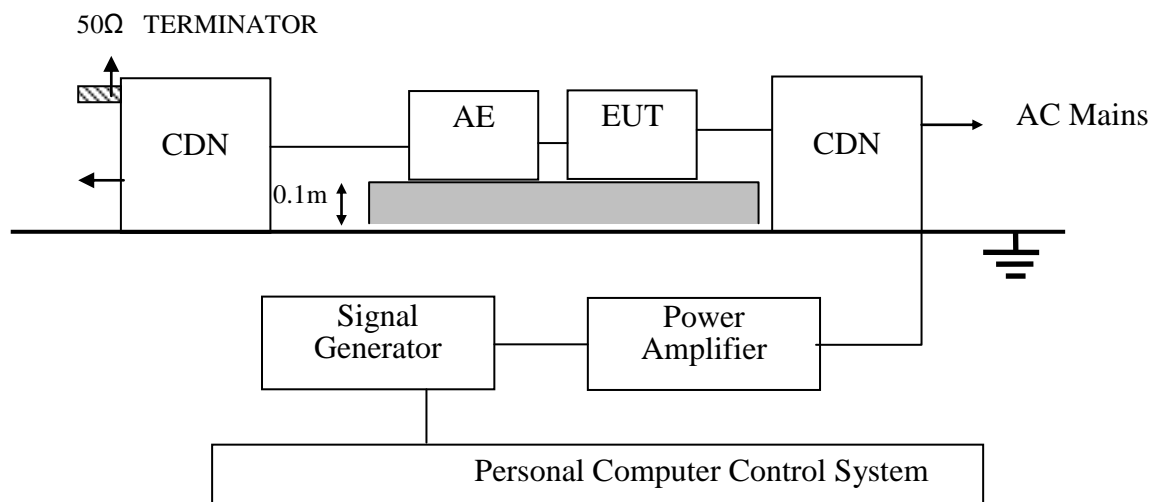
EUT	:	Smoke Detector	Test Date	:	2019.12.05						
M/N	:	YA-S817	Temperature	:	24°C						
Test Engineer	:	Ben Sun	Humidity	:	56 %						
Test Voltage	:	DC 24V From DC Power	Pressure	:	101.6Kpa						
Test Mode	:	Working									
Test Results	:	PASS									
No.of pluse: 5 Times/Phase Angle Interval:60 Seconds											
Line : <input type="checkbox"/> AC Mains <input checked="" type="checkbox"/> DC Supply <input type="checkbox"/> Signal											
Location	Volt	500V			1kV			2kV			Result
	Phase	Performance			Performance			Performance			(Pass/ Fail)
		Required	+	-	Required	+	-	Required	+	-	
L-N	0°	/	/	/	/	/	/	/	/	/	/
	90°	/	/	/	/	/	/	/	/	/	/
	180°	/	/	/	/	/	/	/	/	/	/
	270°	/	/	/	/	/	/	/	/	/	/
L-PE	0°	/	/	/	/	/	/	/	/	/	/
	90°	/	/	/	/	/	/	/	/	/	/
	180°	/	/	/	/	/	/	/	/	/	/
	270°	/	/	/	/	/	/	/	/	/	/
N-PE	0°	/	/	/	/	/	/	/	/	/	/
	90°	/	/	/	/	/	/	/	/	/	/
	180°	/	/	/	/	/	/	/	/	/	/
	270°	/	/	/	/	/	/	/	/	/	/
DC Line	/	B	A	A	B	A	A	/	/	/	Pass
Note:	1. Class A is no function loss.										

8. INJECTED CURRENTS SUSCEPTIBILITY TEST

8.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Conducted Immunity test System	SKET	CITS_150 K230M	SK2019101 001_CITS	2019.11.08	1 Year
2.	Fixed Coaxial Attenuator (6dB Attenuation)	CD	ATT-0675	120540086	2019.09.06	1 Year
3.	coupling-decoupling network (CDN)	CD	CDN M2/M3	2302	2019.09.06	1 Year
4.	Electromagnetic Injection Clamp (EMC-Clamp)	CD	EM-Clamp	0513A0312 01	2019.09.06	1 Year

8.2. Block Diagram of Test Setup



8.3. Injected currents susceptibility Test Limits

Level	Voltage Level (e.m.f.) V
1	1
2	3
3	10
X	Special

Notes: 1. Test set-up reference IEC 61000-4-6:2013

8.4. Configuration of EUT on Test

The following equipment are installed on Electrostatic Discharge Test to meet the IEC 61000-4-6 requirements and operating regulations in a manner that tends to maximize its emission characteristics in normal application.

8.5. Operating Condition of EUT

- (1) Setup the EUT as shown as Section 12.2.
- (2) Turn on the power of all equipment.
- (3) Let the EUT work in test mode and 15 minutes before taking the test.

8.6. Test Procedure

- (1) Let the EUT work in test mode and test it.
The EUT are placed on an insulating support 0.1m high above a ground reference plane.
- (2) CDN (coupling and decoupling device) is placed on the ground plane about 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 10 and 30 mm (where possible).
- (3) The disturbance signal described below is injected to EUT through CDN.
- (4) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- (5) The frequency range is swept from 0.150MHz to 100MHz using 10V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept
- (6) incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- (7) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

8.7. Injected currents susceptibility Test Results

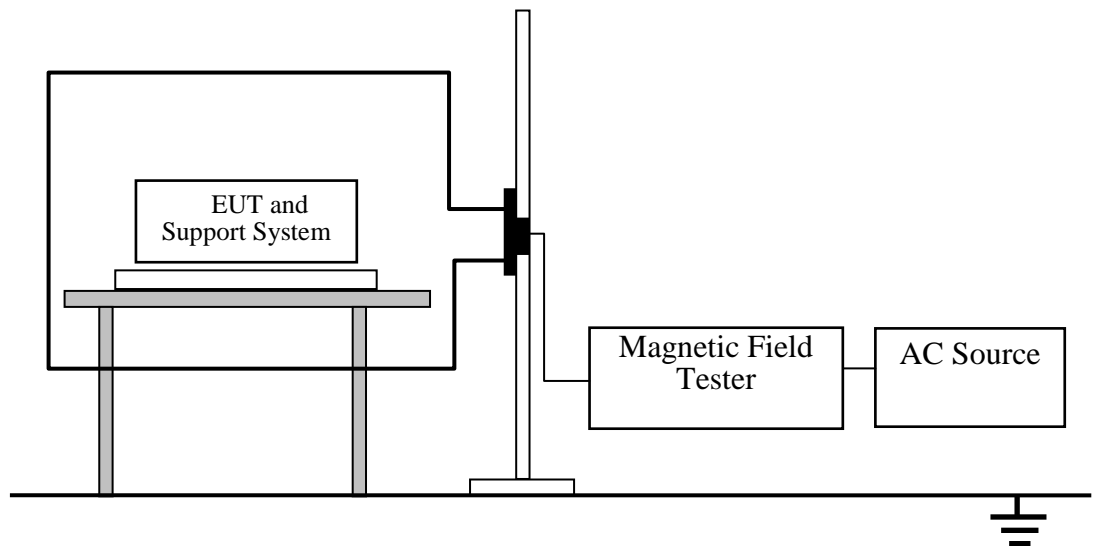
EUT	: Smoke Detector	Test Date	: 2019.12.05		
M/N	: YA-S817	Temperature	: 24°C		
Test Engineer	: Ben Sun	Humidity	: 56 %		
Test Voltage	: DC 24V From DC Power	Pressure	: 101.6Kpa		
Test Mode	: Working				
Test Results	: PASS				
Frequency Range (MHz)	Injected Position	Voltage Level (e.m.f.)	Required	Observation	Result (Pass / Fail)
0.15 ~ 100	DC Line	10V/m	A	A	PASS
Step : <u> 1 </u> % Dwell Time : <u> 1 </u> Sec					
DIRECT CDN Type : <input type="checkbox"/> M2 <input type="checkbox"/> M3 <input checked="" type="checkbox"/> Clamp					
Modulation Signal: 1kHz 80% AM					
Remark: Class A is no function loss.					

9. Magnetic Field Immunity Test

9.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Multifunctional Compact Immunity Test system	3ctest	CCS 600	ES0801655	2018.09.21	1 Year
2.	Surge&EFT Coupling Decoupling Network	3ctest	SEPN 3832T	ES0951601	2018.09.21	1 Year
3.	Voltage variation and PF magnetic field regulating device	3ctest	VMT2216S	ES0441601	2018.09.21	1 Year
4.	Capacitive Coupling Clamp	3ctest	CCC 100	EC0441660	2018.09.21	1 Year

9.2. Block Diagram of Test Setup



9.3.magnetic field Test Limits

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

Notes: 1. Test set-up reference IEC 61000-4-8:2009

9.4.Configuration of EUT on Test

The following equipment are installed on Electrostatic Discharge Test to meet the IEC 61000-4-8 requirements and operating regulations in a manner that tends to maximize its emission characteristics in normal application.

9.5.Operating Condition of EUT

- (1) Setup the EUT as shown as Section 13.2.
- (2) Turn on the power of all equipment.
- (3) Let the EUT work in test mode and 15 minutes before taking the test.

9.6.Test Procedure

The EUT was subjected to the test magnetic field by using the induction coil of standard

- (1) dimensions (1m*1m) and shown in Section 13.2. The induction coil was then rotated by 90° in order to expose the EUT to the test field with different orientations.

9.7.magnetic field immunity Test Results

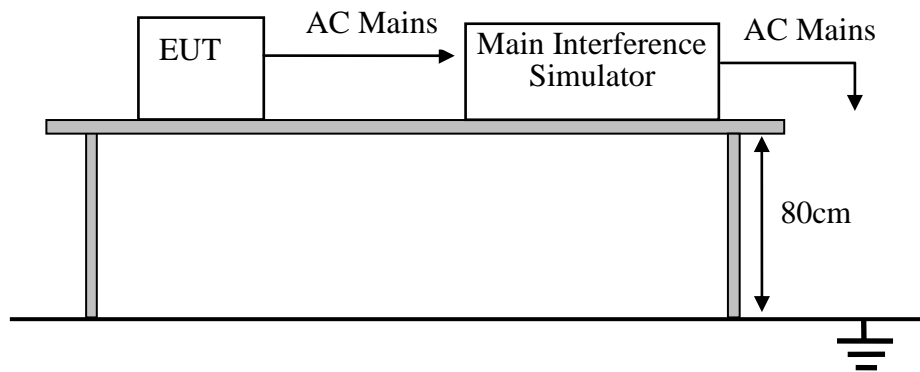
EUT	: Smoke Detector	Test Date	: N/A
M/N	: YA-S817	Temperature	: N/A
Test Engineer	: N/A	Humidity	: N/A
Test Voltage	: N/A	Pressure	: N/A
Test Mode	: N/A		
Test Results	: N/A		
Note: The EUT not containing devices susceptible to magnetic fields, and Power-frequency magnetic field test applicable only to EUT containing devices susceptible to magnetic fields, so the test not applicable.			

10. VOLTAGE DIPS AND INTERRUPTIONS TEST

10.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Multifunctional Compact Immunity Test system	3ctest	CCS 600	ES0801655	2018.09.21	1 Year
2.	Surge&EFT Coupling Decoupling Network	3ctest	SEPN 3832T	ES0951601	2018.09.21	1 Year
3.	Voltage variation and PF magnetic field regulating device	3ctest	VMT2216S	ES0441601	2018.09.21	1 Year
4.	Capacitive Coupling Clamp	3ctest	CCC 100	EC0441660	2018.09.21	1 Year

10.2. Block Diagram of Test Setup



10.3.Voltage dips and interruptions Test Limits

Test Level % U _T	Voltage dip and short interruptions % U _T	Performance Criterion	Duration (in period)
80	20	A	250
70	30	A	25
40	60	A	10
0	100	A	250

Notes: 1. Test set-up reference IEC 61000-4-11:2004

10.4.Configuration of EUT on Test

The following equipment are installed on Electrostatic Discharge Test to meet the IEC 61000-4-11 requirements and operating regulations in a manner that tends to maximize its emission characteristics in normal application.

10.5.Operating Condition of EUT

- (1) Setup the EUT as shown as Section 14.2.
- (2) Turn on the power of all equipment.
- (3) Let the EUT work in test mode and 15 minutes before taking the test.

10.6.Test Procedure

- (1) The interruption is introduced at selected phase angles with specified duration.
- (2) Record any degradation of performance.

10.7.Voltage dips and interruptions Test Results

EUT	: Smoke Detector	Test Date	: N/A
M/N	: YA-S817	Temperature	: N/A
Test Engineer	: N/A	Humidity	: N/A
Test Voltage	: N/A	Pressure	: N/A
Test Mode	: N/A		
Test Results	: N/A		
Note	: Not applicable for equipment operated with PC, battery, or Power Supply.		

11.PHOTOGRAPH

11.1.Photos of Electrostatic Discharge Test



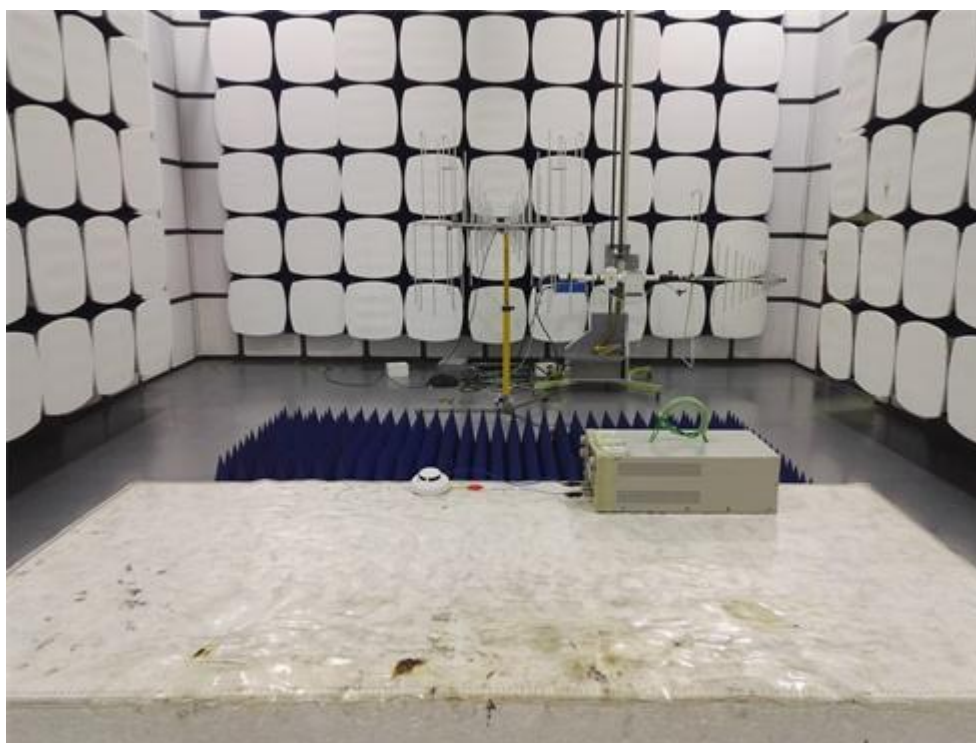
11.2.Photos of EFT Surge Test



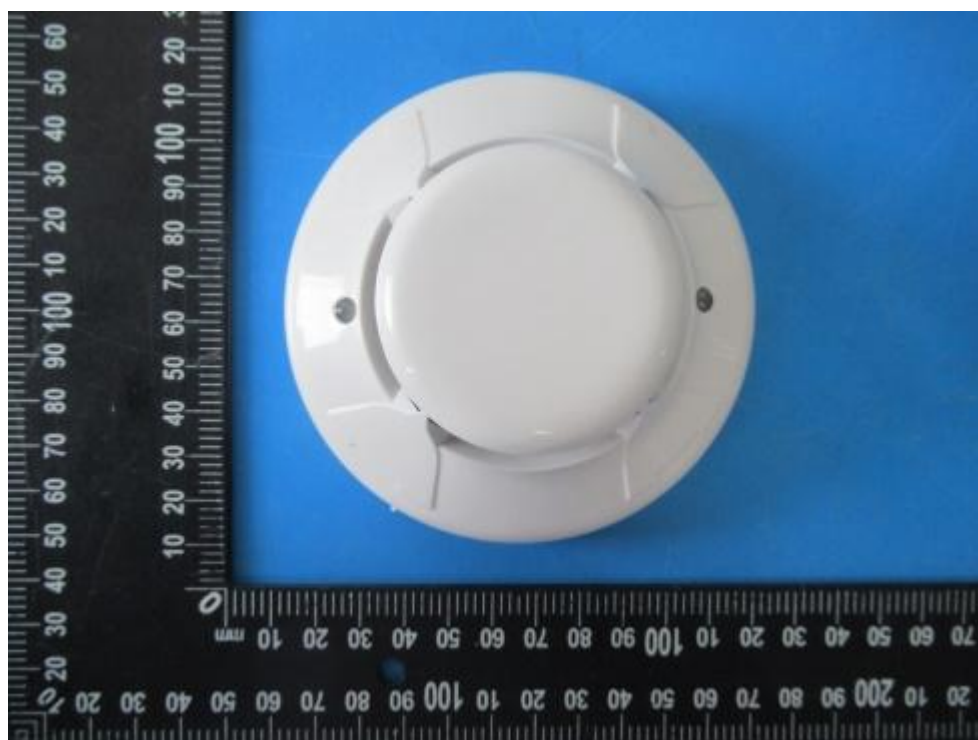
11.3.Photos of Surge Test



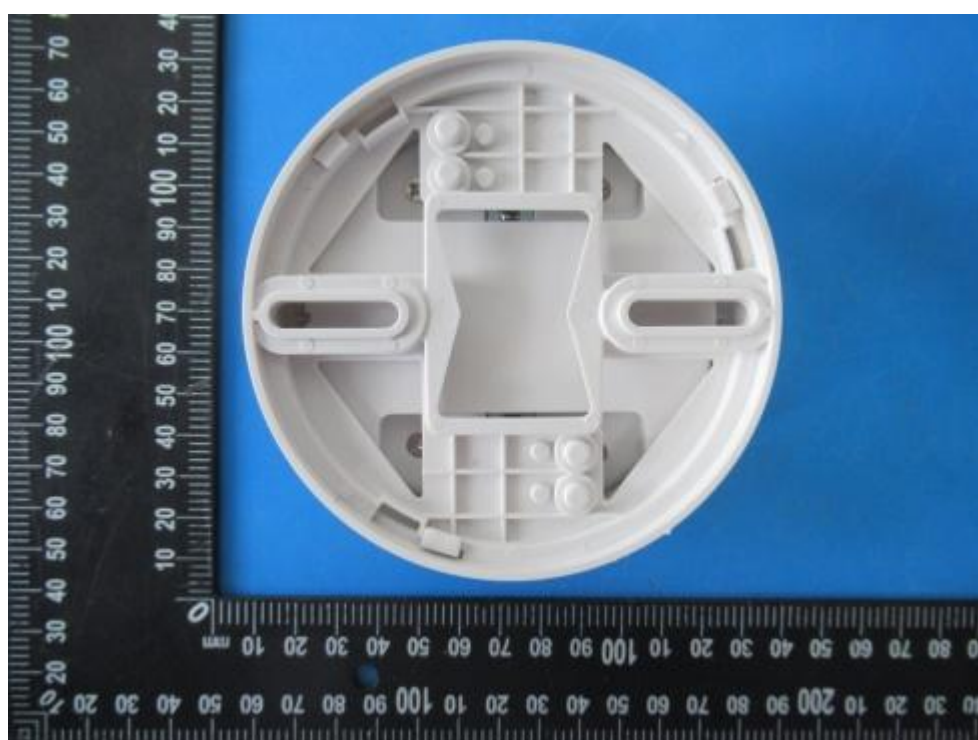
11.4.Photo of RF Field Strength Susceptibility test



12. PHOTOS OF THE EUT



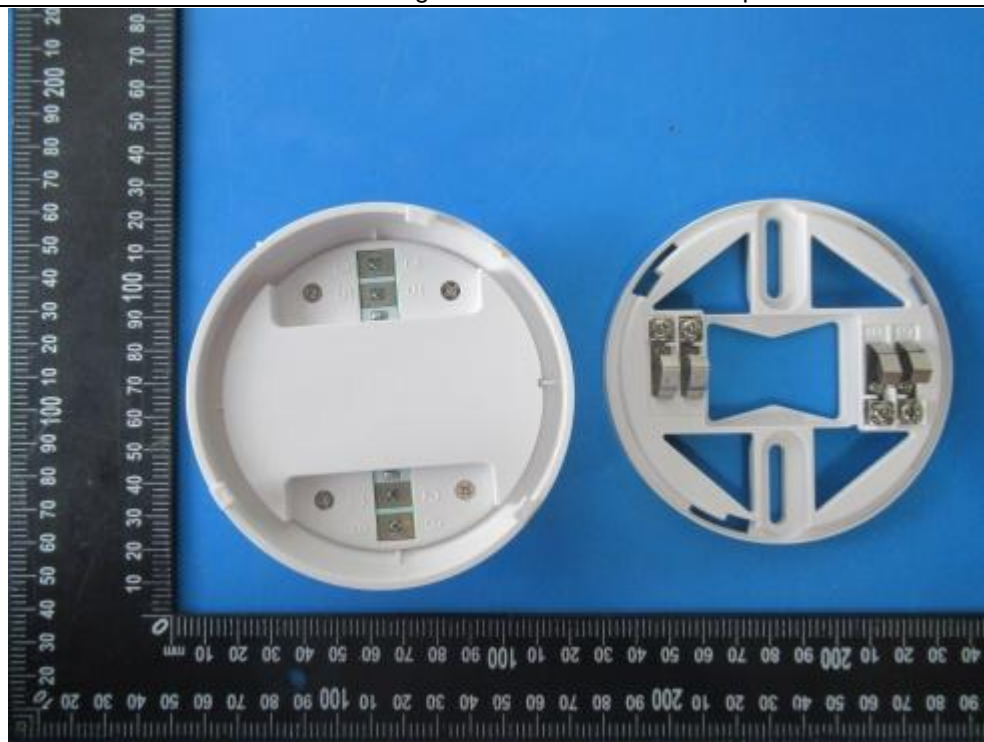
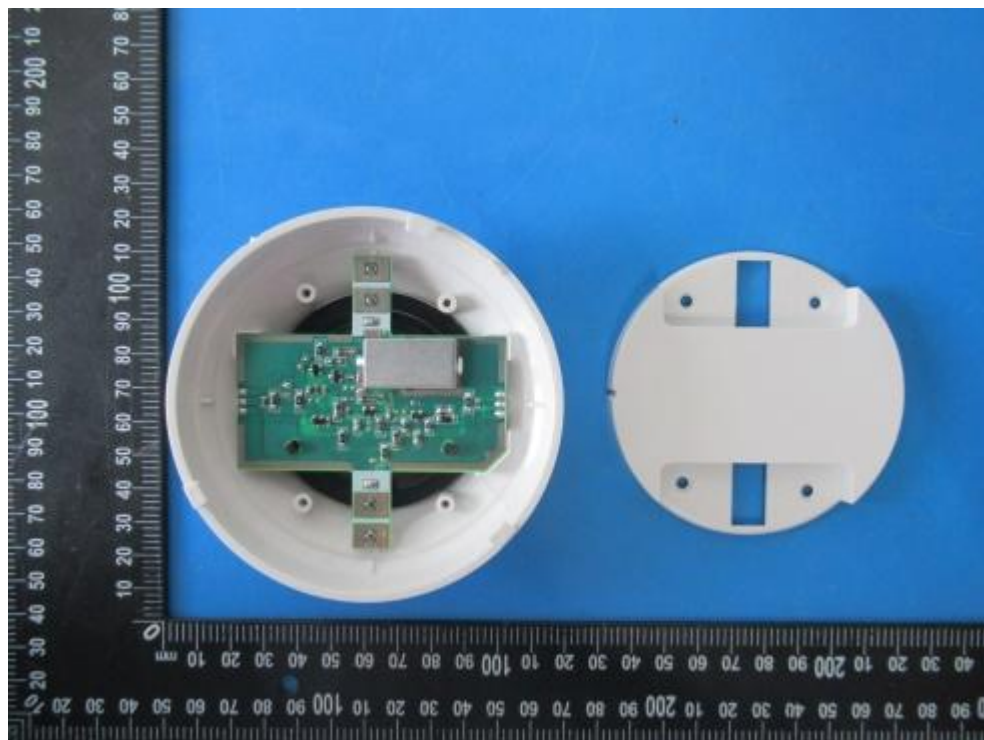
EUT View

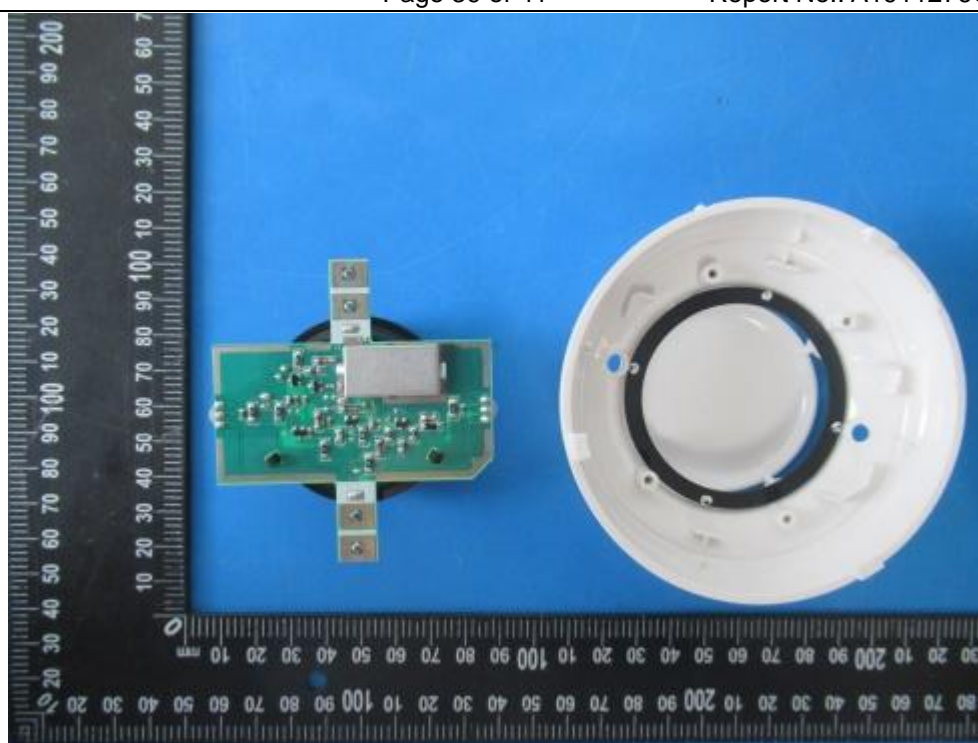
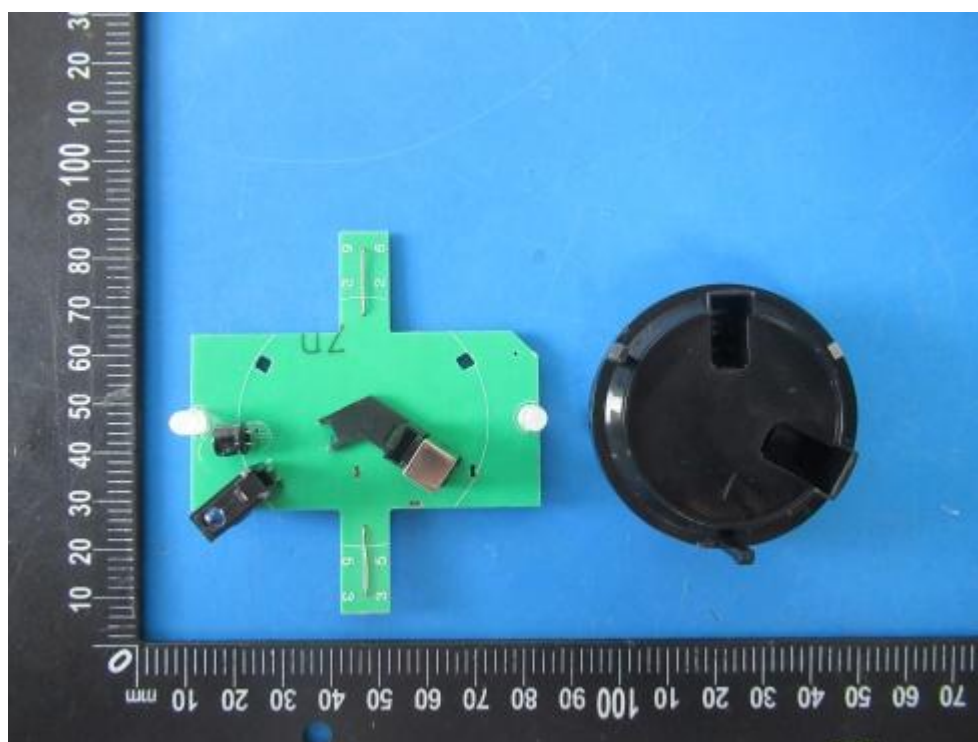


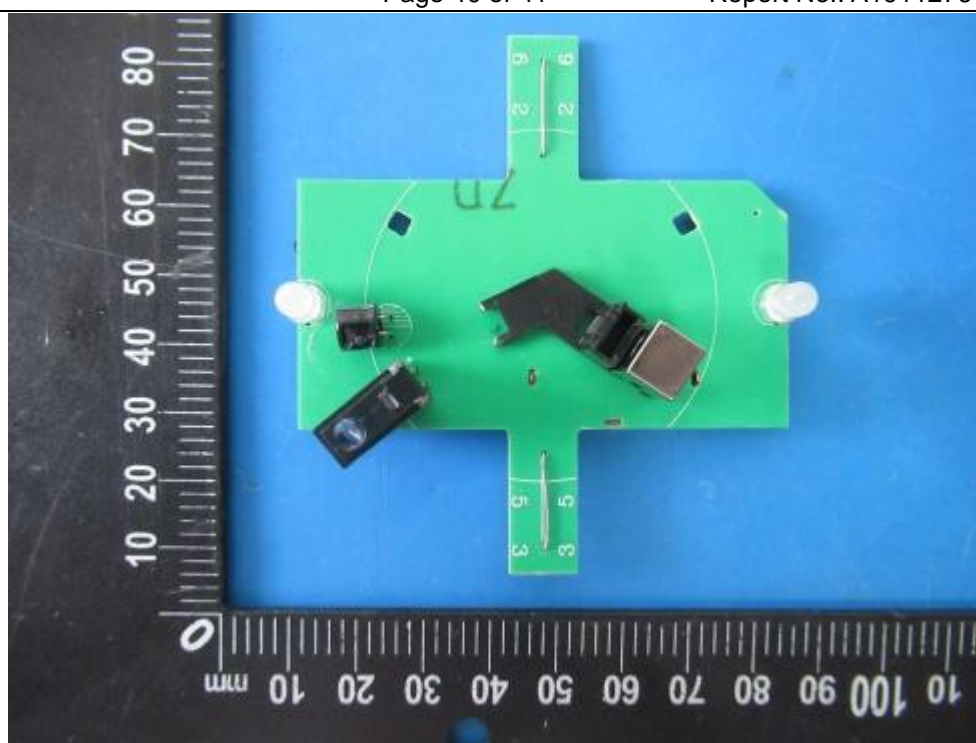
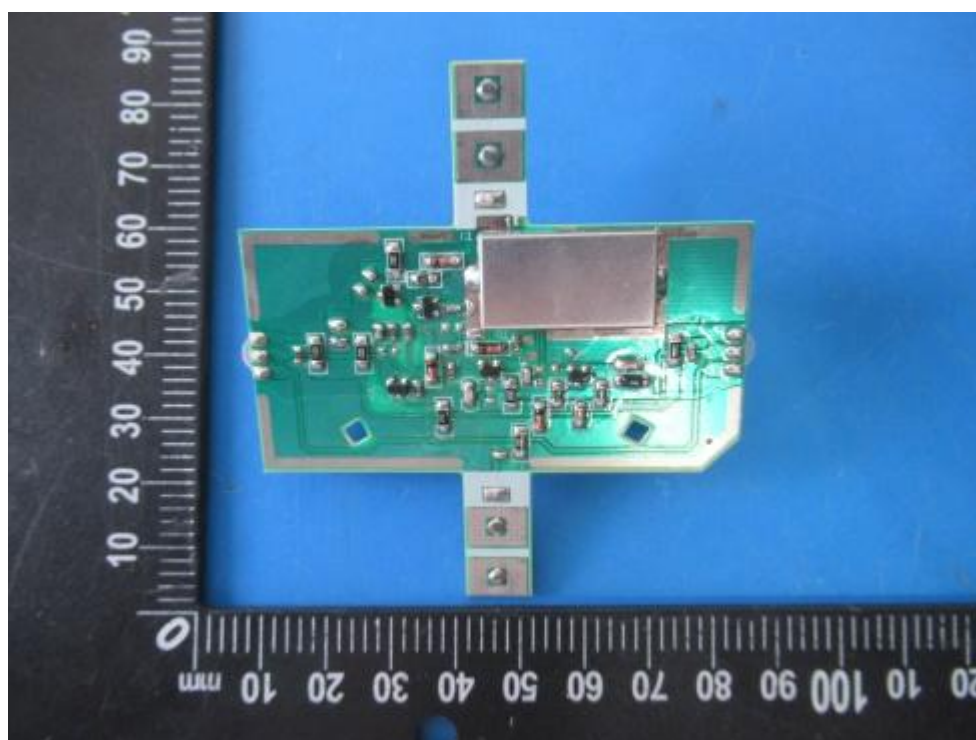
EUT View

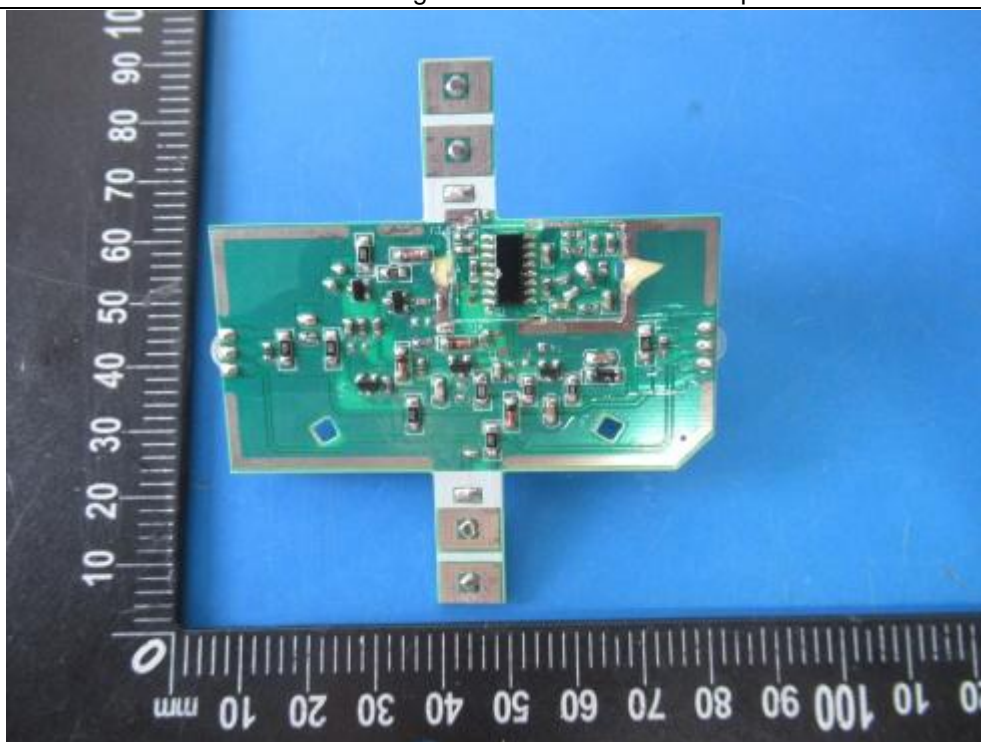
**EUT View****EUT View**

**EUT View****EUT View**

**EUT View****EUT View**

**EUT View****EUT View**

**EUT View****EUT View**



EUT View

-----End of report-----