YAKE Testing & Certificate Co., Ltd.
Tel: +86-755-36853890 E-mail: yake@yakecert.com

TEST REPORT
EN 55032:2015+AC:2016+A11:2020
EN 55035:2017+A11:2020

Report Reference No.	**YAKE20210202219E**	
Compiled by (position+printed name+signature) ..... :	Linna Liu (File administrators)	Linna Liu
Supervised by (position+printed name+signature) ..... :	Andy Huang (Test Engineer)	Andy Huang
Approved by (position+printed name+signature) ..... :	Jason Lee (Manager)	Jason Lee
Date of issue ..... :	Feb. 05, 2021	

APPROVED

Testing Laboratory Name ..... :	**YAKE Testing & Certificate Co., Ltd.**
Address.....:	F/5, Bldg.16, Chuangke Town, Nanshan District, Shenzhen, Guangdong, China
Applicant's name..... :	**Shenzhen Noyafa Technology Co., Ltd.**
Address ..... :	Wanjing Business Center, #2506 Xinyu Road, Xinqiao, Baoan District, Shenzhen, P.R.C.
Test specification:	
Standard ..... :	**EN 55032:2015+AC:2016+A11:2020** **EN 55035:2017+A11:2020**

Test item description .....:	Underground Wire Locator
Trade Mark .....:	/
Manufacturer.....:	Shenzhen Noyafa Technology Co., Ltd.
Model/Type reference.....:	NF-820
Listed Models .....:	NF-816, NF-817, NF-819, NF-822, NF-823
Ratings.....:	DC 3.7V
Result.....:	**PASS**

TEST REPORT

Test Report No. : YAKE20210202219E	Feb. 05, 2021 Date of issue

Equipment under Test	:	Underground Wire Locator
Model /Type	:	NF-820
Listed Models	:	NF-816, NF-817, NF-819, NF-822, NF-823
Applicant	:	**Shenzhen Noyafa Technology Co., Ltd.**
Address	:	Wanjing Business Center, #2506 Xinyu Road, Xinqiao, Baoan District, Shenzhen, P.R.C.
Manufacturer	:	**Shenzhen Noyafa Technology Co., Ltd.**
Address	:	Wanjing Business Center, #2506 Xinyu Road, Xinqiao, Baoan District, Shenzhen, P.R.C.

Test Result	**PASS**

Note:The test report merely corresponds to the test sample.

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

EN 55032:2015+AC:2016+A11:2020 Electromagnetic compatibility of multimedia equipment - Emission Requirements
EN 55035:2017+A11:2020 Electromagnetic compatibility of multimedia equipment - Immunity requirements

2 . SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Feb. 02, 2021
Testing commenced on	:	Feb. 02, 2021
Testing concluded on	:	Feb. 05, 2021

2.2. Product Description

Product Name:	Underground Wire Locator
Trade Mark:	/
Model/Type reference:	NF-820
List Model:	NF-816, NF-817, NF-819, NF-822, NF-823
Power supply:	DC 3.7V

2.3. EUT operation mode

Test mode	Working
1	■

Note:
1. ■ is operation mode.
2. Pre-scan above all test mode, found below test mode which it was worse case mode.

Test item	Test mode (Worse case mode)
Conducted emission	Mode 1
Radiated emission	Mode 1
EMS	Mode 1

2.4. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

YAKE Testing & Certificate Co., Ltd.
F/5, Bldg.16, Chuangke Town, Nanshan District, Shenzhen, Guangdong, China

3.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Lative Humidity	55 %
Air Pressure	989 hPa

3.3. Test Description

Emission Measurement		
Radiated Emission	EN 55032:2015+AC:2016+A11:2020	PASS
Conducted Emission(AC Mains)	EN 55032:2015+AC:2016+A11:2020	N/A
Harmonic Current Emissions	EN IEC 61000-3-2:2019	N/A
Voltage Fluctuations and Flicker	EN 61000-3-3:2013+A1:2019	N/A
Immunity Measurement		
Electrostatic Discharge	EN 55035:2017+A11:2020	PASS
RF Electromagnetic Field	EN 55035:2017+A11:2020	PASS
Fast Transients Common Mode	EN 55035:2017+A11:2020	N/A
RF Common Mode 0,15 MHz to 80 MHz	EN 55035:2017+A11:2020	N/A
Voltage Dips and Interruptions	EN 55035:2017+A11:2020	N/A
Surges	EN 55035:2017+A11:2020	N/A
Power frequency magnetic field	EN 55035:2017+A11:2020	N/A

Remark:1. N/A means “not applicable”.
2.The measurement uncertainty is not included in the test result.

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01” Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics;Part 1” and TR-100028-02 “Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics;Part 2 “ and is documented in the YAKE Testing & Certificate Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for YAKE Testing & Certificate Co., Ltd. is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 dB	(1)
Conducted Disturbance	0.15~30MHz	3.39 dB	(1)

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

3.5. Equipments Used during the Test

RADIATED EMISSION						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum analyzer	R&S	FSU26	1166.1660.26	2020/10/24	1Y
2	Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	2020/10/24	1Y
3	Double Ridged Horn Antenna	R&S	HF907	100276	2020/10/24	1Y
4	Pre-Amplifier	R&S	SCU-01	10049	2020/10/24	1Y
5	Pre-amplifier	A.H.	PAM0-0118	360	2020/10/24	1Y
6	RF Cable	R&S	R01	10403	2020/10/24	1Y
7	RF Cable	R&S	R02	10512	2020/10/24	1Y
8	RF Cable	R&S	R01	10454	2020/10/24	1Y
9	RF Cable	R&S	R02	10343	2020/10/24	1Y

Conducted Emission						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Cal.	Cal. Interval
1	LISN	EMCO	3816/2	00042991	2020/10/24	1Y
2	LISN	EMCO	3816/2	00042990	2020/10/24	1Y
3	Pulse Limiter	Electro-Metrics	EM-7600	112644	2020/10/24	1Y
4	50Ω Terminator	N/A	N/A	N/A	2020/10/24	1Y
5	Test Cable	N/A	C01	N/A	2020/10/24	1Y
6	EMI Test Receiver	R&S	ESCI	100082	2020/10/24	1Y

Conducted disturbances induced by radio-frequency fields						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Conducted Disturbances test system	SCHLODER	CDG 6000	335625	2020/10/24	1Y
2	CDN	SCHLODER	CDN M2+M3	A2210225/2013	2020/10/24	1Y
3	Radio Communication Tester	Rohde&Schwarz	CMW500	115406	2020/10/24	1Y

RF Field Strength Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	SIGNAL GENERATOR	IFR	2032	203002/100	Last Cal.	Cal. Interval
2	AMPLIFIER	AR	150W1000	301584	2020/10/24	1Y
3	DUAL DIRECTIONAL COUPLER	AR	DC6080	301508	2020/10/24	1Y
4	POWER HEAD	AR	PH2000	301193	2020/10/24	1Y
5	POWER METER	AR	PM2002	302799	2020/10/24	1Y
6	TRANSMITTING AERIAL	AR	AT1080	28570	2020/10/24	1Y
7	POWER AMPLIFIER	AR	25S1G4A	0325511	2020/10/24	1Y
8	DUAL DIRECTIONAL COUPLER	AR	DC7144A	0325100	Last Cal.	Cal. Interval
9	TRANSMITTING AERIAL	AR	AT4002A	0324848	2020/10/24	1Y
10	Radio Communication Tester	Rohde&Schwarz	CMW500	115406	2020/10/24	1Y
11	Audio Analyzer	Rohde&Schwarz	UPL	SB3439	2020/10/24	1Y

ESD						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Cal.	Cal. Interval
1	ESD Simulator	Thermo	MZ-15/EC	0502184	2020/10/24	1Y

SURGE, EFT/BURST, VOLTAGE INTERRUPTION/DIPS						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Cal.	Cal. Interval
1	EMC Immunity Test System	Thermo	EMCPRO PLUS	0502176	2020/10/24	1Y

The calibration interval is 1 year.

4. TEST CONDITIONS AND RESULTS

4.1. EMISSION

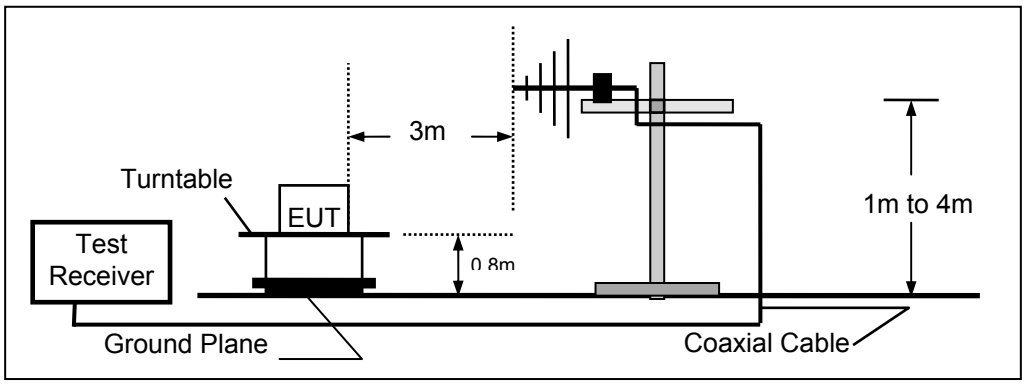
4.1.1. Radiated Emission

LIMIT

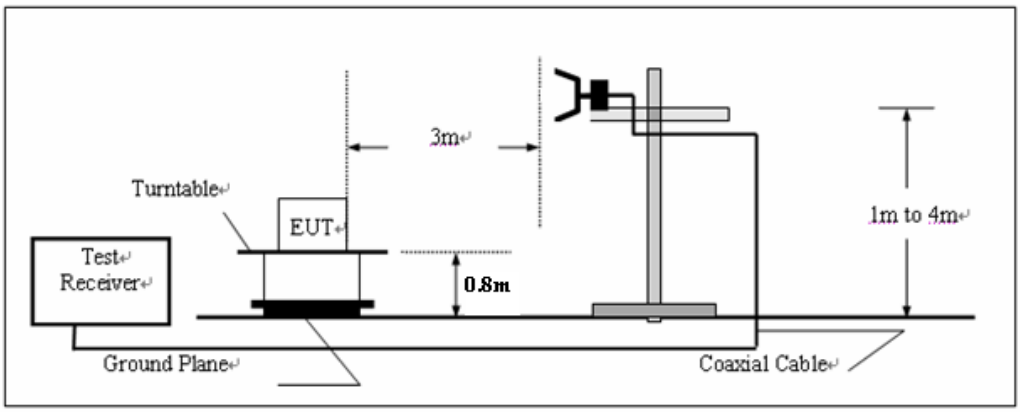
Please refer to EN55032 Annex A, Table A.2,A.3, and Class B

TEST CONFIGURATION

a) Radiated emission test set-up, frequency below 1000MHz:



b) Radiated emission test set-up, frequency above 1000MHz



TEST PROCEDURE

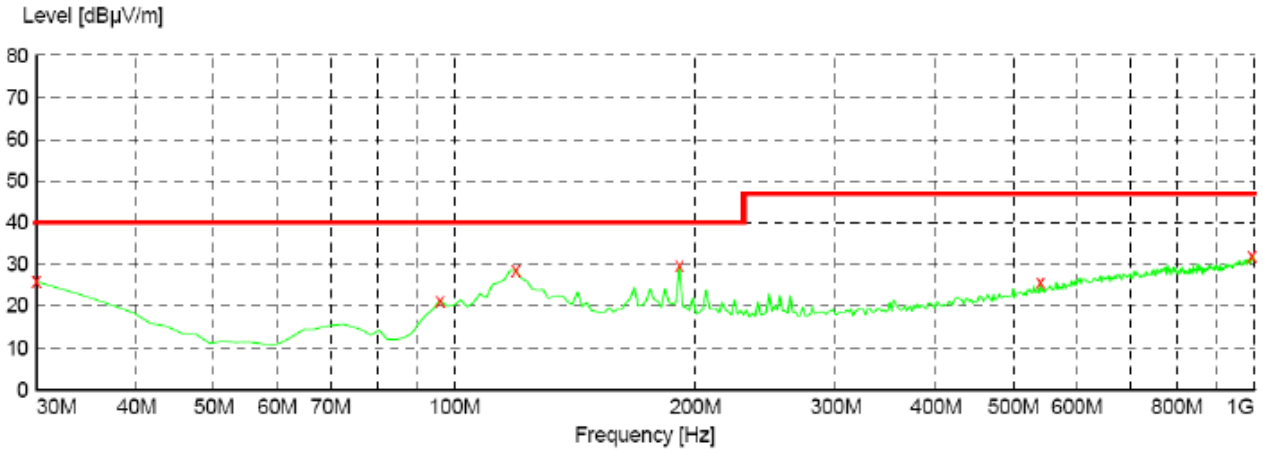
Please refer to EN55032 Annex A for the measurement methods

TEST RESULTS

Passed

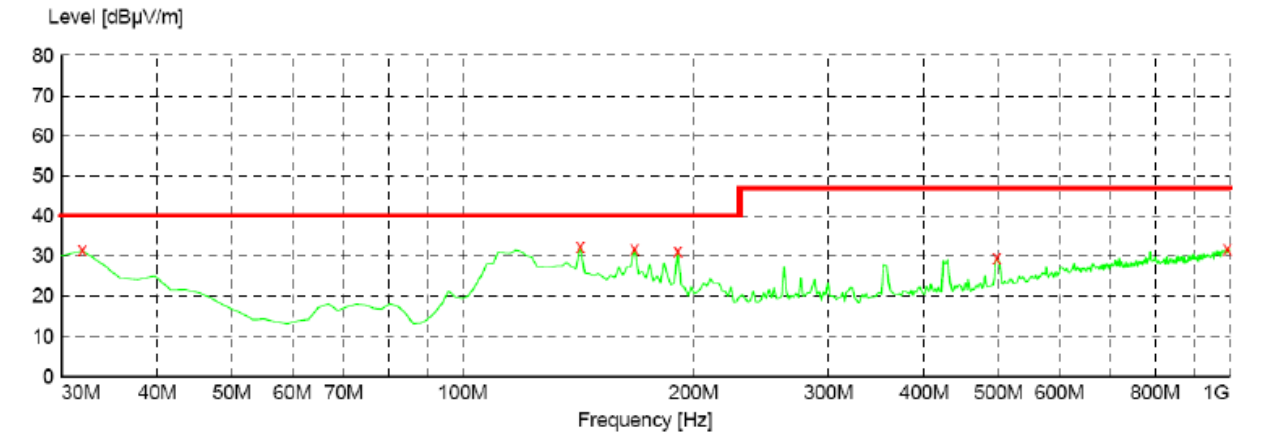
Please refer to the below test data:

Test mode:	Mode 1	Polarization	Horizontal



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	26.00	22.1	40.0	14.0	---	0.0	0.00	HORIZONTAL
95.960000	21.40	10.3	40.0	18.6	---	0.0	0.00	HORIZONTAL
119.240000	28.70	15.0	40.0	11.3	---	0.0	0.00	HORIZONTAL
191.020000	29.70	14.6	40.0	10.3	---	0.0	0.00	HORIZONTAL
540.220000	25.90	21.6	47.0	21.1	---	0.0	0.00	HORIZONTAL
994.180000	32.20	28.1	47.0	14.8	---	0.0	0.00	HORIZONTAL

Test mode:	Mode 1	Polarization	Vertical



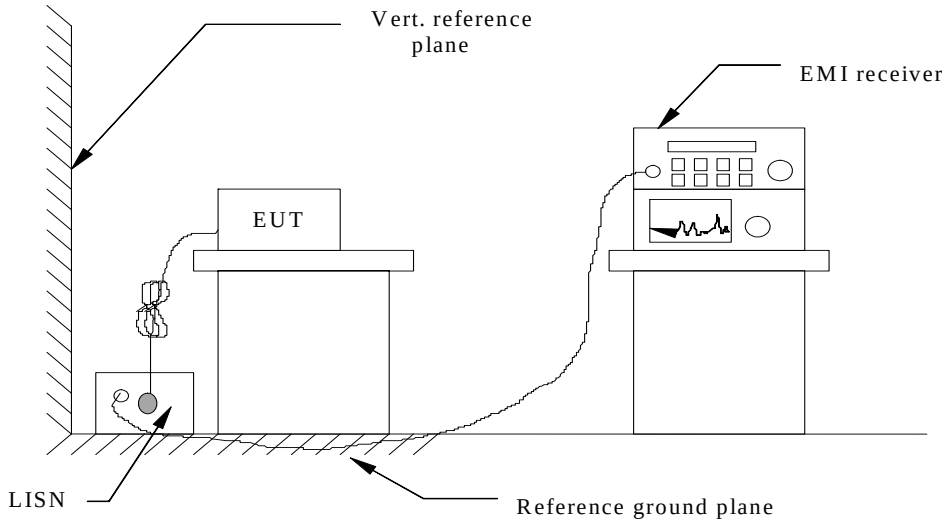
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
31.940000	31.40	20.9	40.0	8.6	---	0.0	0.00	VERTICAL
142.520000	32.40	14.7	40.0	7.6	---	0.0	0.00	VERTICAL
167.740000	31.70	14.5	40.0	8.3	---	0.0	0.00	VERTICAL
191.020000	31.20	14.6	40.0	8.8	---	0.0	0.00	VERTICAL
497.540000	29.40	20.5	47.0	17.6	---	0.0	0.00	VERTICAL
994.180000	31.90	28.1	47.0	15.1	---	0.0	0.00	VERTICAL

4.1.2. Conducted Emission

LIMIT

Please refer to ETSI EN301489-1 Clause 8.4.3, Table 8 and EN55032 Annex A, Table A.10, A.12

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN55032 Annex A for the measurement methods.

TEST RESULTS

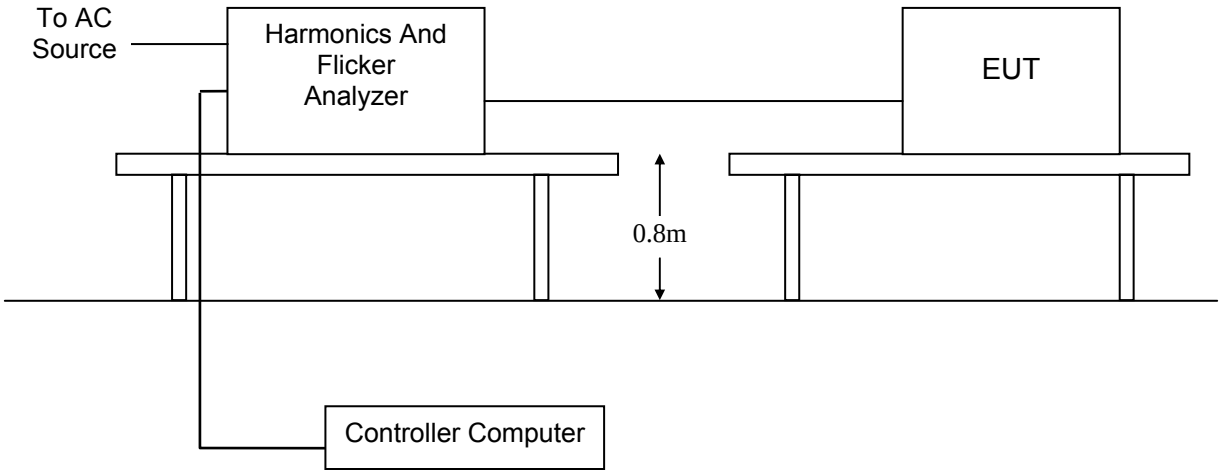
The EUT is not connected with AC power, So this test item is not applicable for the EUT.

4.1.3. Harmonic Current Emission

LIMIT

Please refer to EN 61000-3-2

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-3-2 for the measurement methods.

TEST RESULTS

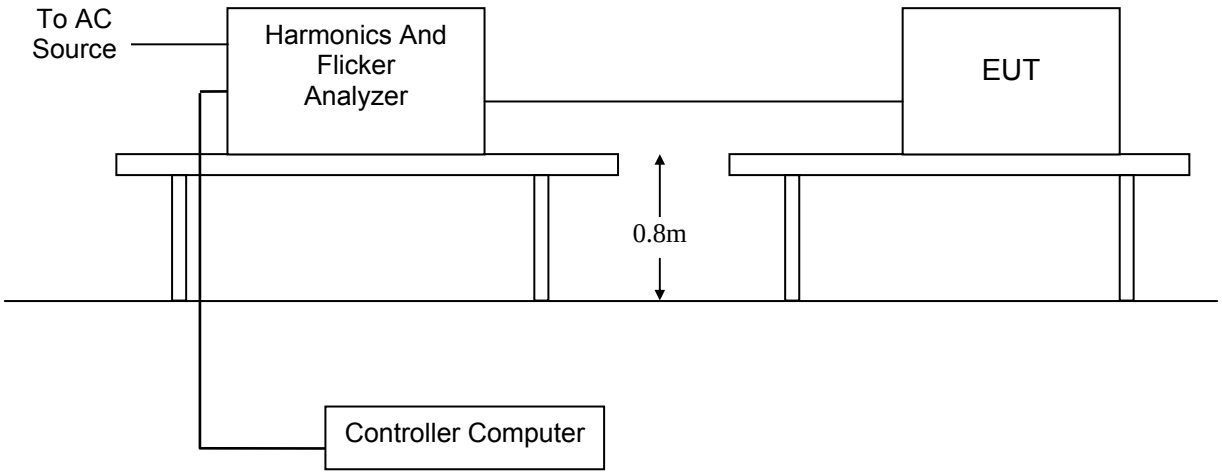
The power of the EUT is less than 75W, So this test item is not applicable for the EUT.

4.1.4. Voltage Fluctuation and Flicker

LIMIT

Please refer to EN 61000-3-3

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-3-3 for the measurement methods.

TEST RESULTS

The maximum input power of the EUT is less than 20W, which unlikely to produce significant voltage fluctuation. Therefore this test item is not applicable for the EUT.

See clause 6.1 *** EN 61000-3-3:2008, clause 6.1:" ... Tests need not be made on equipment which is unlikely to produce significant voltage fluctuations or flicker. ...".***

4.2. IMMUNITY

4.2.1. Performance criteria

- **Performance Criterion of EN55035**

Performance criterion A: The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended.The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion B: During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.

After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended.The performance level may be replaced by a permissible loss of performance.

If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Performance criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored bythe operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed.

Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

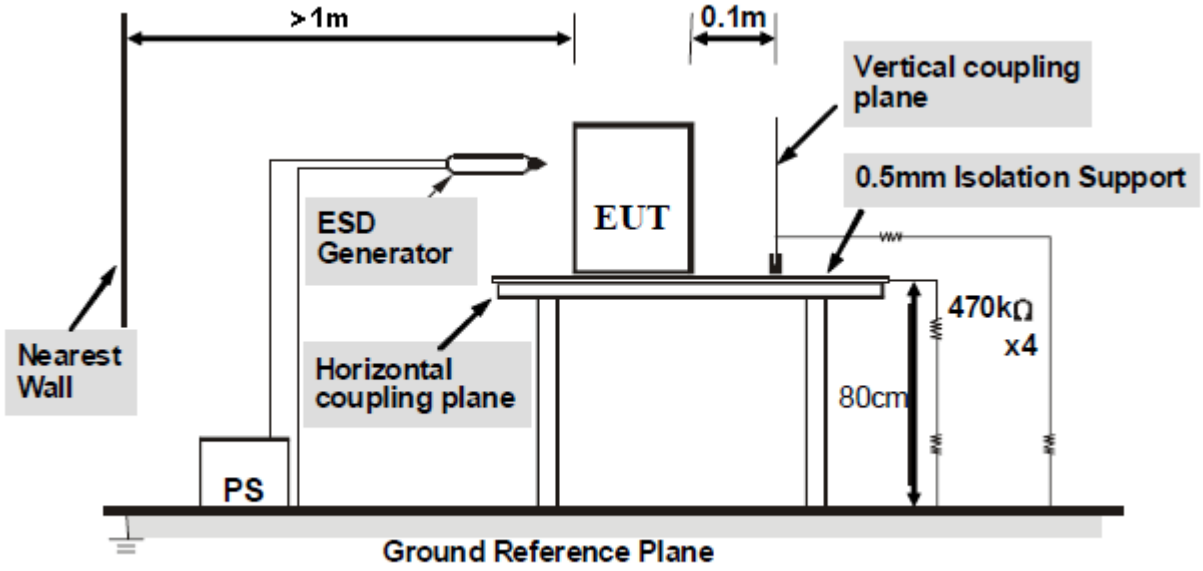
4.2.2. Electrostatic Discharge

LIMIT

SEVERITY LEVELS OF ELECTROSTATIC DISCHARGE

Test level: Contact Discharge at ±2KV, ±4KV Air Discharge at ±2KV, ±4KV, ±8KV

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 55035 and EN 61000-4-2 for the measurement methods.

Contact Discharge:

The ESD generator is held perpendicular to the surface to which the discharge is applied and the tip of the discharge electrode touch the surface of EUT. Then turn the discharge switch. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Air Discharge:

Air discharge is used where contact discharge can't be applied. 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 at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Indirect discharge for horizontal coupling plane:

At least 10 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT.

Indirect discharge for vertical coupling plane:

At least 10 single discharges 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 completely illuminated.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Direct discharge				
Type of discharge	Discharge voltage (KV)	Observations Performance	Criteria Level	Result
Contact discharge	±2	No degradation in performance of the EUT was observed (A)	B	Pass
	±4	A	B	
Air discharge	±2	A	B	
	±4	A	B	
	±8	A	B	
Indirect discharge				
Type of discharge	Discharge voltage (KV)	Observations Performance	Criteria Level	Result
HCP (6 sides)	±2	A	B	Pass
	±4	A	B	
VCP (4 sides)	±2	A	B	
	±4	A	B	

Remark: The ancillary equipment's specification for an acceptable level of performance or degradation of performance during and/or after the ESD tests.

4.2.3. RF Electromagnetic Field

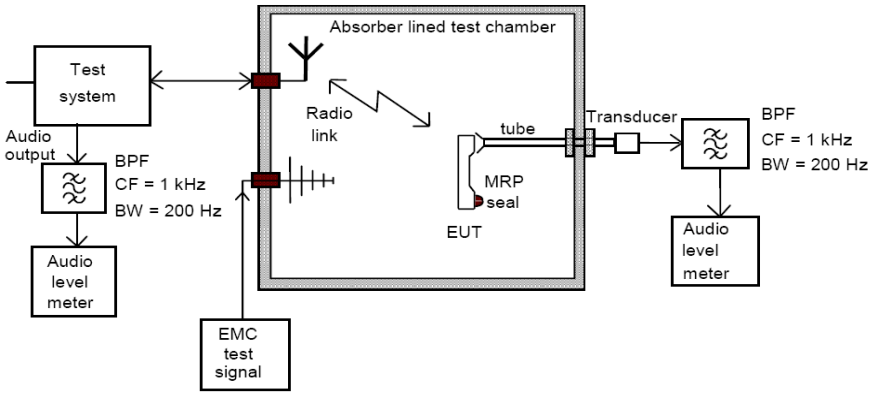
PERFORMANCE CRITERION

Criteria A

TEST LEVEL

3V/m (80%, 1kHz Amplitude Modulation)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN55035 and EN 61000-4-3 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)	Result
80MHz-6GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	V	Front	A	Pass
			H		A	Pass
			V	Rear	A	Pass
			H		A	Pass
			V	Left	A	Pass
			H		A	Pass
			V	Right	A	Pass
			H		A	Pass
			V	Top	A	Pass
			H		A	Pass
			V	Bottom	A	Pass
			H		A	Pass

Remark: A: No degradation in performance of the EUT was observed

4.2.4. Surges

PERFORMANCE CRITERION

Criteria B

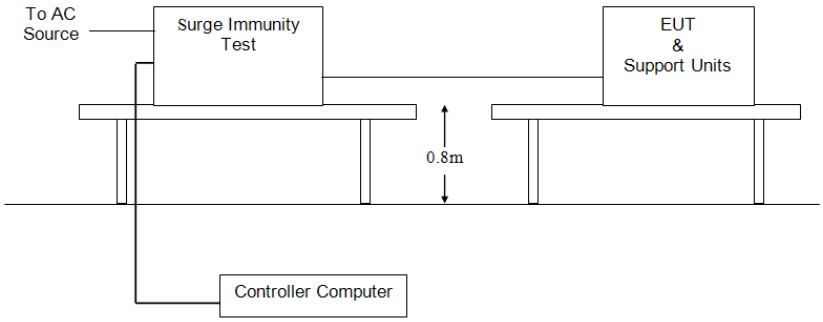
TEST LEVEL

1kV Line to Line: Differential mode

2kV Line to Ground: Common mode

(Voltage Waveform: 1.2/50 us; Current Waveform: 8/20 us)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN55035 and EN 61000-4-5 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

N/A

4.2.5. RF- Common Mode 0.15MHz to 80MHz

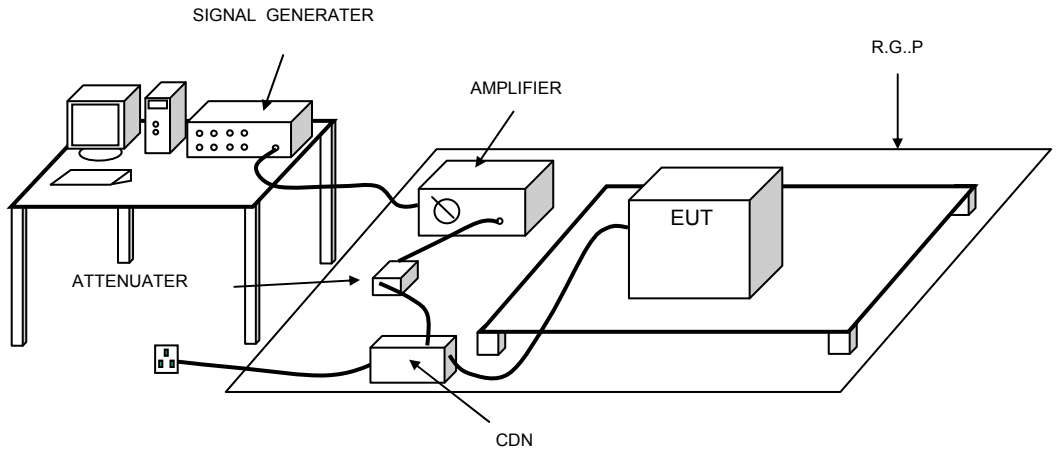
PERFORMANCE CRITERION

Criteria A

TEST LEVEL

3Vrms on AC main port (80%, 1kHz Amplitude Modulation)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN55035 and EN 61000-4-6 for the measurement methods.

TEST MODE

N/A

4.2.6. Fast Transients Common Mode

PERFORMANCE CRITERION

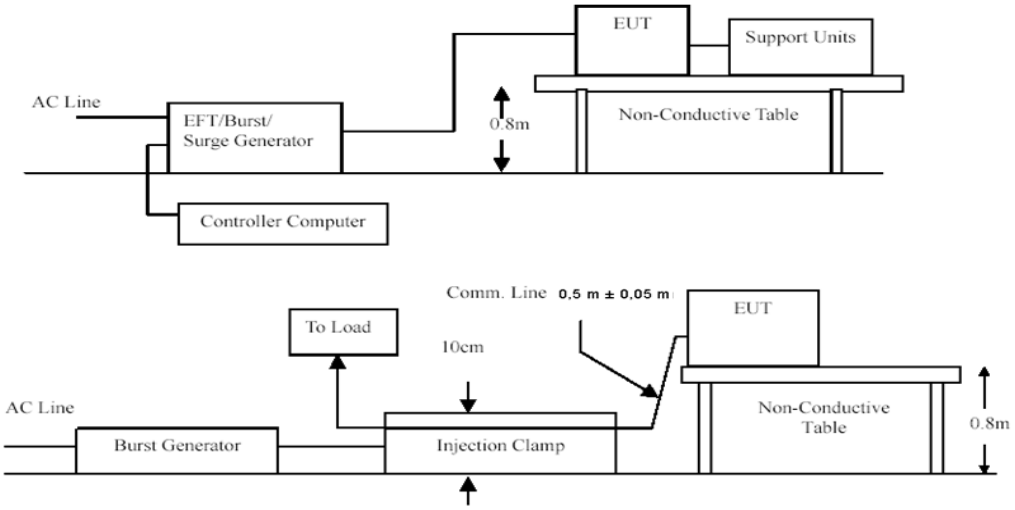
Criteria B

TEST LEVEL

1KV for AC main port

(Impulse Frequency: 5 kHz; Tr/Th: 5/50ns; Burst Duration: 15ms; Burst Period: 3Hz)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN55035 and EN 61000-4-4 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

N/A

4.2.7. Voltage Dips and Interruptions

PERFORMANCE CRITERION

>95% VD, 0.5 period----Performance criterion: B

>95% VD, 1.0 period----Performance criterion: B

30% VD, 25 period----Performance criterion: C

>95% VI, 250 period----Performance criterion: C

TEST LEVEL

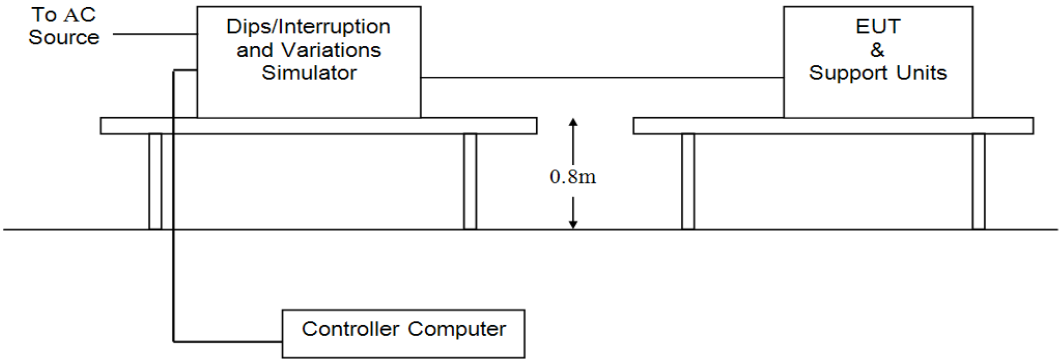
0% of VT(Supply Voltage) for 0.5 period

0% of VT(Supply Voltage) for 1.0 period

70% of VT(Supply Voltage) for 25 period

0% of VT(Supply Voltage) for 250 period

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN55035 and EN 61000-4-11 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

N/A

5. External and Internal Photos of the EUT

Photo 1

Photo 2

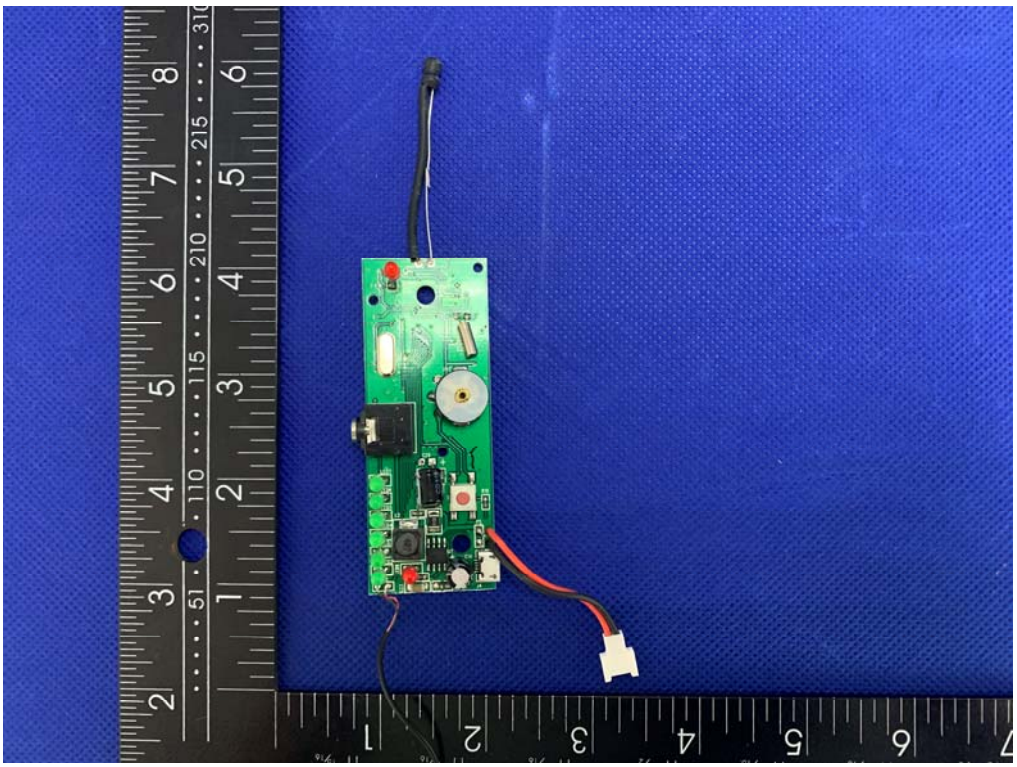


Photo 3

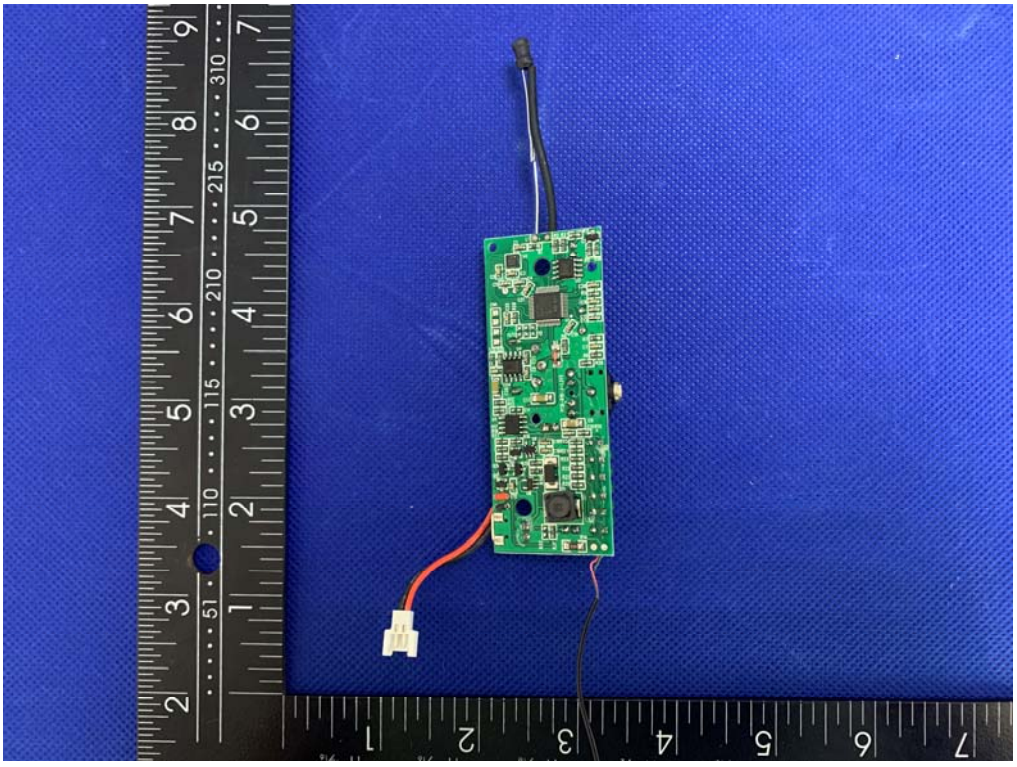


Photo 4

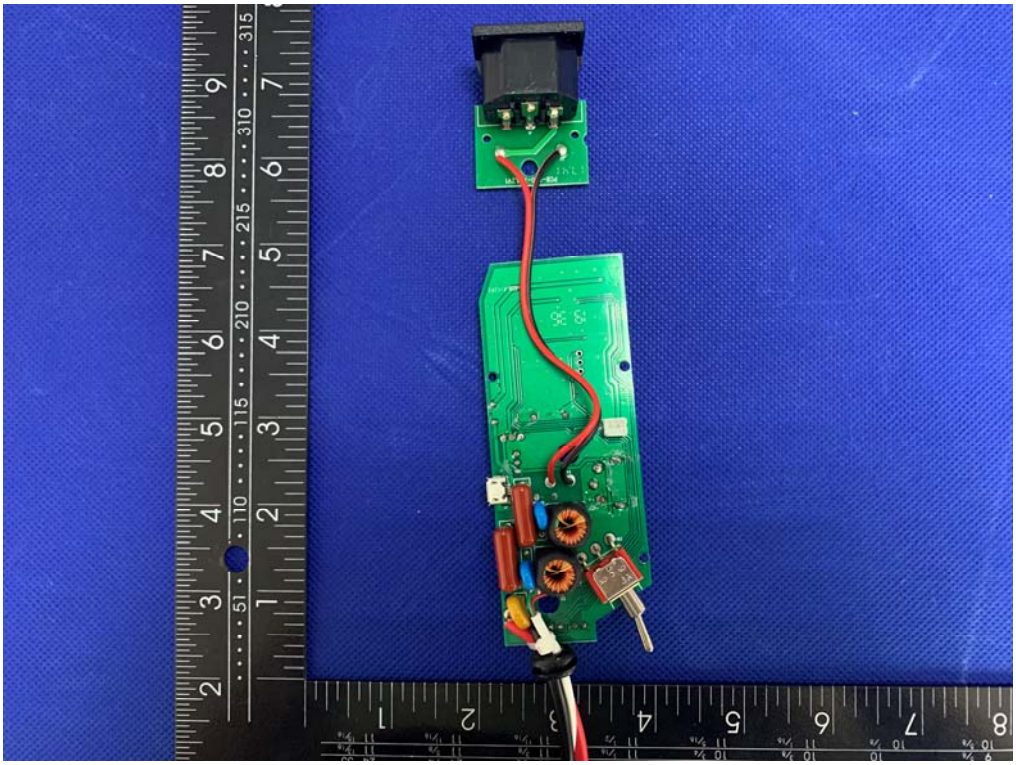


Photo 5

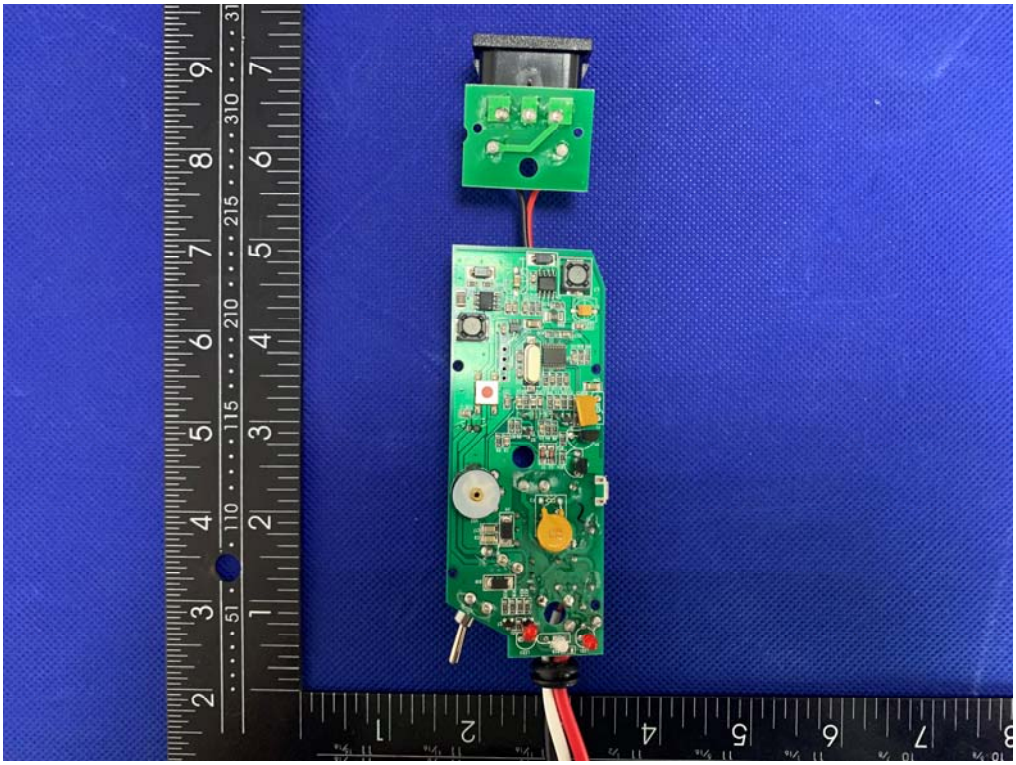


Photo 6

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

– Certificate – Certificat – Zertifikat – Certificato – Certificado –

Certificate of Conformity

EMC Directive 2014/30/EU

Registration No.: YAKE20210202219

Applicant.....:	Shenzhen Noyafa Technology Co., Ltd.
Address.....:	Wanjing Business Center, #2506 Xinyu Road, Xinqiao, Baoan District, Shenzhen, P.R.C.
Manufacturer.....:	Shenzhen Noyafa Technology Co., Ltd.
Address.....:	Wanjing Business Center, #2506 Xinyu Road, Xinqiao, Baoan District, Shenzhen, P.R.C.
Product.....:	Underground Wire Locator
Model(s).....:	NF-816, NF-817, NF-819, NF-820, NF-822, NF-823

The test sample of product has been passed, the test according to requirements of the following standards:

Standard(s):	Test report(s) No.:
EN 55032:2015+AC:2016+A11:2020 EN 55035:2017+A11:2020	YAKE20210202219E

Remark: Based on the voluntary assessment of the product sample and technical file, we confirm that the above-mentioned product meets the requirements of the EC directive. The CE mark as show below can be used, under the responsibility of the manufacturer or the importer, after completion of an EC declaration of conformity and compliance with all relevant EC directives.

CE

YAKE TESTING & CERTIFICATE CO., LTD. YAKE

Jason

Department Manager

Date: Feb. 05, 2021

YAKE Testing & Certificate Co., Ltd.

F/5, Bldg.16, Chuangke Town, Nanshan District, Shenzhen, Guangdong, China

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