

TEST REPORT

Application No. : S202011205887

Applicant's name : Shenzhen Uni-medica Technology Co. Ltd

Applicant's address ... : Room 202,Block 6th,LiuXian Culture Park, XiLi Town, NanShan District, Shenzhen, Guangdong Province, P. R. China.

Sample description ... : Nucleic Acid Extractor

Model : NFAST 96

Trade Mark..... : 

Date of receipt of test item : 2020.10.08

Test standard : IEC 61326-1:2012;EN 61326-1:2013; IEC 61326-2-6:2012; EN 61326-2-6:2013

Test date(s) : 2020.10.08-2020.11.24

Test location : G9 building, China Sensor Network International innovation Park, No.200, Linghu Ave, new district of Wuxi, China

Test result..... : The test results are in compliance with the above mentioned standards.

Date of issue : 2020.11.26

Tested by:	Reviewed by:	Approved by:
Line Chen	Kerry Zhou	Zeming Zhang / Manager
		



Abbreviations: P = passed; F = failed; N/A = not applicable

NOTE: The test data in this report refers to the data in report S202009251018E01. The sample in this report is different from the sample in the original report only by the model name, and the rest are the same.

The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced, except in full, without the written approval of FGTEST.

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1. TEST RESULT SUMMARY

Clause	Test Item	Test Standard	Result (Pass/Fail)
Emission Measurements			
EN 61326-1:2013 IEC 61326-1:2012	Conducted Emission	CISPR 11	Pass
	Radiated Emission	CISPR 11	Pass
	Harmonic Current Emissions	IEC 61000-3-2	N/A
	Voltage Fluctuations and Flicker	IEC 61000-3-3	N/A
Immunity Measurements			
EN 61326-1:2013 IEC 61326-1:2012	Electrostatic Discharge	IEC 61000-4-2	Pass
	Radio-Frequency Electromagnetic Field	IEC 61000-4-3	Pass
	Electrical Fast Transients	IEC 61000-4-4	Pass
	Surges	IEC 61000-4-5	Pass
	Radio-Frequency Common Mode	IEC 61000-4-6	Pass
	Power Frequency Magnetic Field	IEC 61000-4-8	Pass
	Voltage Dips and Interruptions	IEC 61000-4-11	Pass

2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name: Shenzhen Uni-medica Technology Co. Ltd
 Address: Room 202,Block 6th,LiuXian Culture Park, XiLi Town, NanShan District, Shenzhen, Guangdong Province, P. R. China.

2.2 MANUFACTURER&FACTORY

Name: Shenzhen Uni-medica Technology Co. Ltd
 Address: Room 202,Block 6th,LiuXian Culture Park, XiLi Town, NanShan District, Shenzhen, Guangdong Province, P. R. China.

2.3 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Nucleic Acid Extractor
 Model No.: NFAST 96
 Power Supply Rating: ~198V-~242V, 50Hz/60Hz, 450W

Nameplate:



Product Name: Nucleic Acid Extractor

Model: NFAST 96

S/N:

Power Supply: ~198-~242V, 50Hz/60 Hz, 450W



Shenzhen Uni-medica Technology Co. Ltd

Room 202,Block 6th,LiuXian Culture Park, XiLi Town, NanShan District, Shenzhen, Guangdong Province, P. R. China.



CMC Medical Devices & Drugs S.L.

Address: C/ Horacio Lengo Nº 18, CP 29006, Málaga, Spain



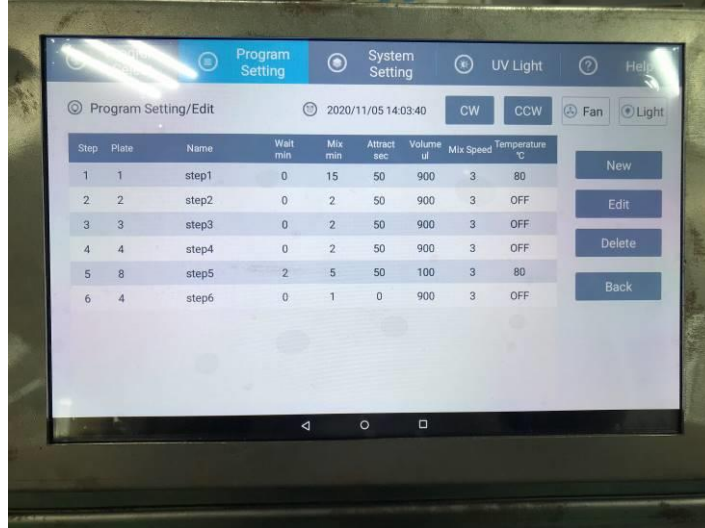
Sample submitting way:

Provided by customer Sampling

2.4 EUT TEST MODE

Mode 1: Turn on fan and lighting,run the program shown below

Test Mode



3. LIST OF USED TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Radiated Emission			
Bi-Log Antenna	ROHDE&SCHWARZ	HL562E	2021-04-01
EMI Receiver	ROHDE&SCHWARZ	ESR26	2021-04-29
Semi anechoic chamber	EMC	EMCCT-3	2023-04-07
Conducted Emission			
EMI Receiver	Rohde & Schwarz	ESR3	2021-03-23
L.I.S.N	Rohde & Schwarz	ENV216	2021-03-15
Electrostatic Discharge(ESD)			
ESD TESTER	3ctest	EDS30T	2021-04-28
Radiated Radio-Frequency Electromagnetic Field (RS)			
Signal Generator	Keysight	N5171B-506	2021-03-15
double-Logarithmic antenna	Frankonia	AXL-80	2021-04-01
Horn Antenna	Frankonia	HAX-6	2021-04-01
Rf power probe	Agilent	U2001A	2021-05-23
Amplifier	Frankonia	VLH-200B1	2021-03-16
Power Amplifier	Frankonia	VLG-40/30G	2021-03-16
Semi anechoic chamber	EMC	EMCCT-3	2023-04-07
Electrical Fast Transient/Burst Immunity Test(EFT)			
EFT Generator	3ctest	EFT500T	2021-04-22
Surge Immunity Test(Surge)			
Surge Generator	3ctest	CWS600G	2021-06-19
Surge Generator	3ctest	SPN3832T	2021-06-19
Conducted Immunity Test(CS)			
Signal Generator	TESEQ	NSG 4070-35	2021-03-15

Attenuator	TESEQ	ATN 6050	2021-03-15
CDN	TESEQ	CDN M016	2021-03-15
Decoupling pliers	TESEQ	KEMA 801A	2021-03-16
Voltage Dips & Short Interruptions(DIP)			
Harmonic analyzer	Ametek	100-CTS-230	2021-05-05
Harmonic power supply	Ametek	5001ix-CTS-400-413-411	2021-05-05
Power Frequency Magnetic Field(PFMF)			
Power frequency magnetic field Generator	3ctest	MFS 400	2021-04-27

4. EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS

Frequency range	Class B group 1 equipment Limits (dB μ V)	
	Quasi-peak	Average
150kHz ~ 0.5MHz	66~56	56~46
0.5 MHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

NOTE:

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

(2) The limit decreases in line with the logarithm of the frequency in the ranges 50 kHz to 150 kHz and 150 kHz to 0.5MHz.

4.1.2 TEST PROCEDURES

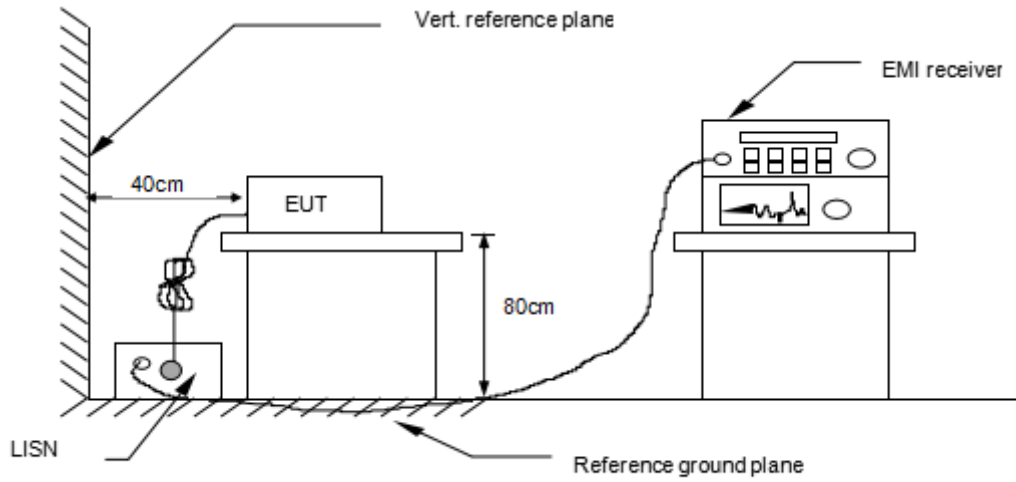
(1) The EUT was placed on a non-metallic table, 80cm above the ground plane.

(2) The power adapter of EUT was connected to the power mains through a line impedance stabilization network (L.I.S.N). which this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted disturbance. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed according to CISPR 11 on conducted disturbance emission test.

(3) The bandwidth of test receiver is set at 9 kHz.

(4) The frequency range from 150 kHz to 30MHz is checked.

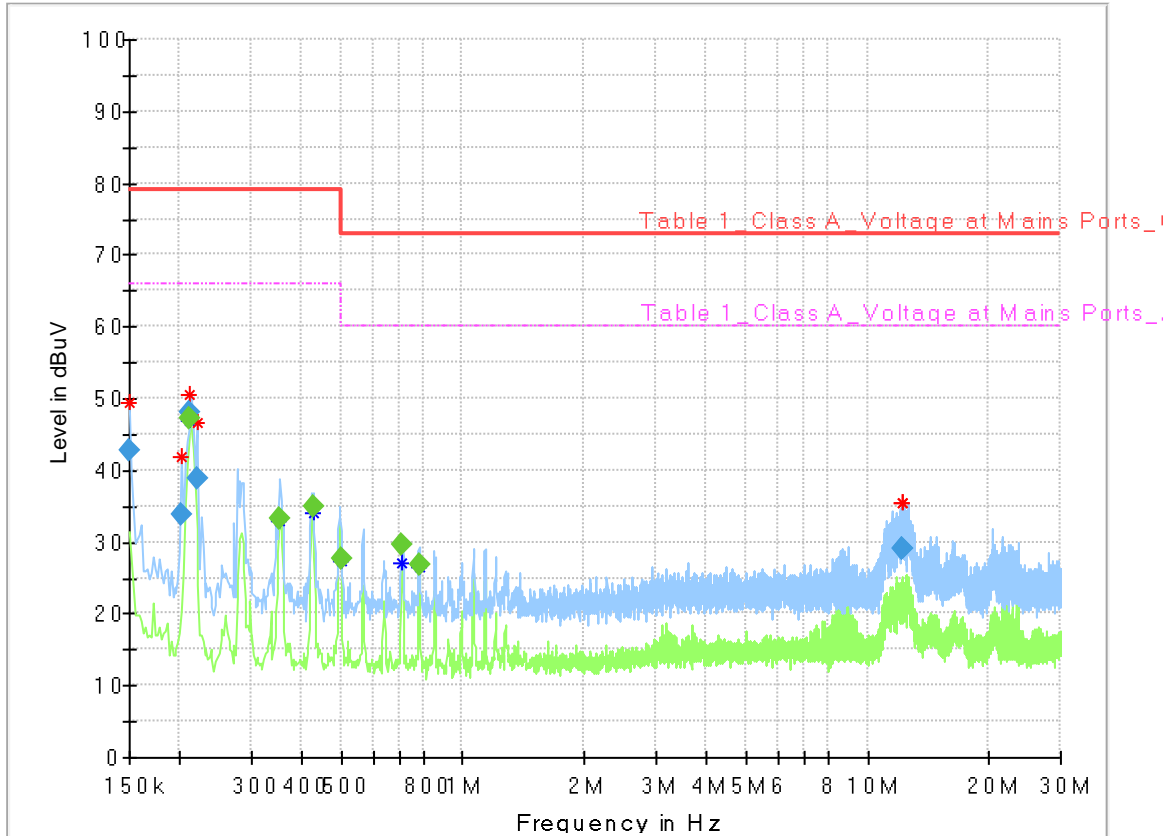
4.1.3 TEST SETUP



4.1.4 TEST RESULTS

Model:	NFAST 96	Phase:	L1
Temp./Hum.(%RH):	22 °C, 55 %	Power supply:	AC 230V/50Hz
Test by:	Mark Xia	Date:	2020/10/13

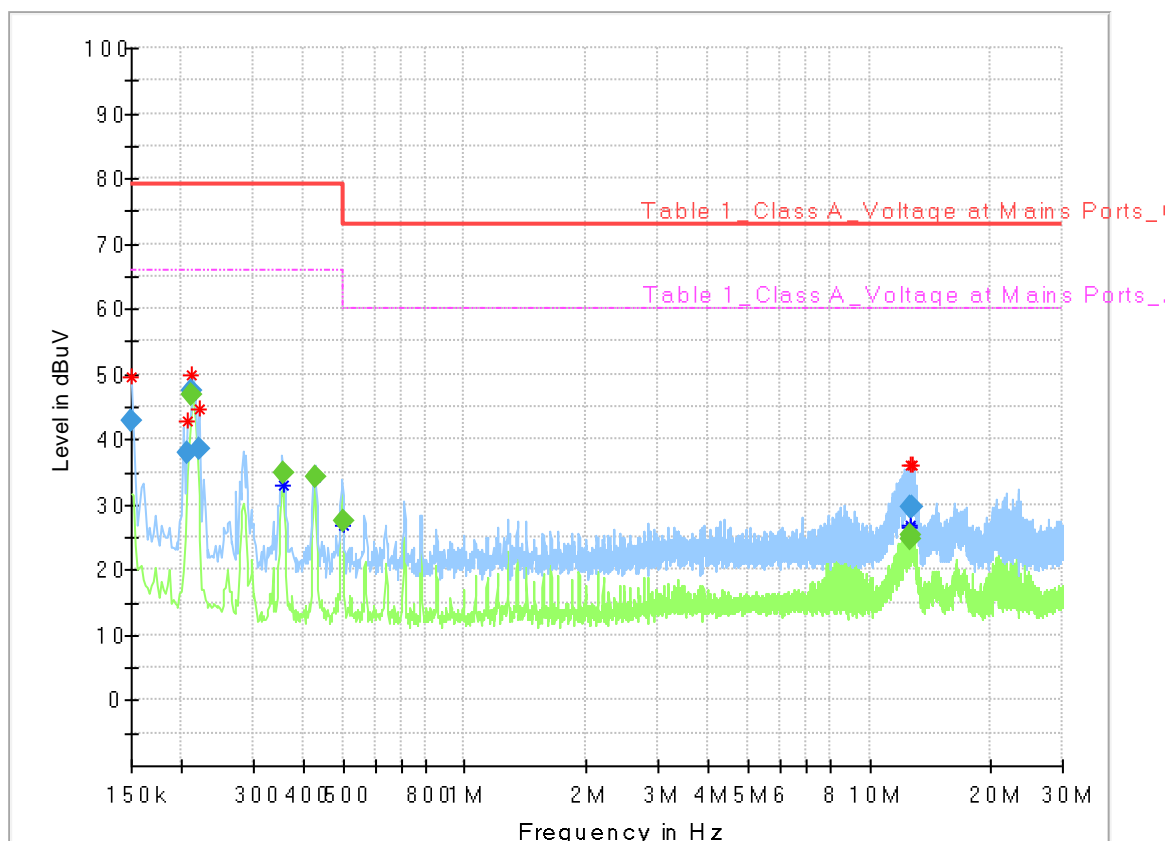
EUT Operation Mode: Mode 1



Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	42.64	---	79.00	36.36	1000.0	9.000	L1	ON	9.9
0.202000	33.70	---	79.00	45.30	1000.0	9.000	L1	ON	9.9
0.212000	48.10	---	79.00	30.90	1000.0	9.000	L1	ON	9.9
0.212000	---	47.14	66.00	18.86	1000.0	9.000	L1	ON	9.9
0.220000	38.71	---	79.00	40.29	1000.0	9.000	L1	ON	9.9
0.352000	---	33.18	66.00	32.82	1000.0	9.000	L1	ON	10.0
0.426000	---	34.84	66.00	31.16	1000.0	9.000	L1	ON	10.0
0.500000	---	27.70	60.00	32.30	1000.0	9.000	L1	ON	10.1
0.708000	---	29.64	60.00	30.36	1000.0	9.000	L1	ON	10.0
0.780000	---	26.77	60.00	33.23	1000.0	9.000	L1	ON	10.0
12.194000	29.11	---	73.00	43.89	1000.0	9.000	L1	ON	9.8
12.246000	29.00	---	73.00	44.00	1000.0	9.000	L1	ON	9.8

Model:	NFAST 96	Phase:	N
Temp./Hum.(%RH):	22 °C, 55 %	Power supply:	AC 230V/50Hz
Test by:	Mark Xia	Date:	2020/10/13

EUT Operation Mode: Mode 1



Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	42.74	---	79.00	36.26	1000.0	9.000	N	ON	9.8
0.206000	38.02	---	79.00	40.98	1000.0	9.000	N	ON	9.9
0.212000	---	46.76	66.00	19.24	1000.0	9.000	N	ON	9.9
0.212000	47.59	---	79.00	31.41	1000.0	9.000	N	ON	9.9
0.220000	38.59	---	79.00	40.41	1000.0	9.000	N	ON	9.9
0.356000	---	34.84	66.00	31.16	1000.0	9.000	N	ON	10.0
0.426000	---	34.18	66.00	31.82	1000.0	9.000	N	ON	10.0
0.500000	---	27.54	60.00	32.46	1000.0	9.000	N	ON	10.1
12.604000	---	25.43	60.00	34.57	1000.0	9.000	N	ON	9.8
12.678000	29.59	---	73.00	43.41	1000.0	9.000	N	ON	9.8
12.678000	---	24.82	60.00	35.18	1000.0	9.000	N	ON	9.8
12.702000	29.63	---	73.00	43.37	1000.0	9.000	N	ON	9.8

4.2 RADIATED EMISSION

4.2.1 LIMITS

FREQUENCY(MHz)	Class A group 1 equipment Limits dB(μ V/m)
	Distance: 3m
30 ~230	50 quasi peak
230 ~1000	57 quasi peak

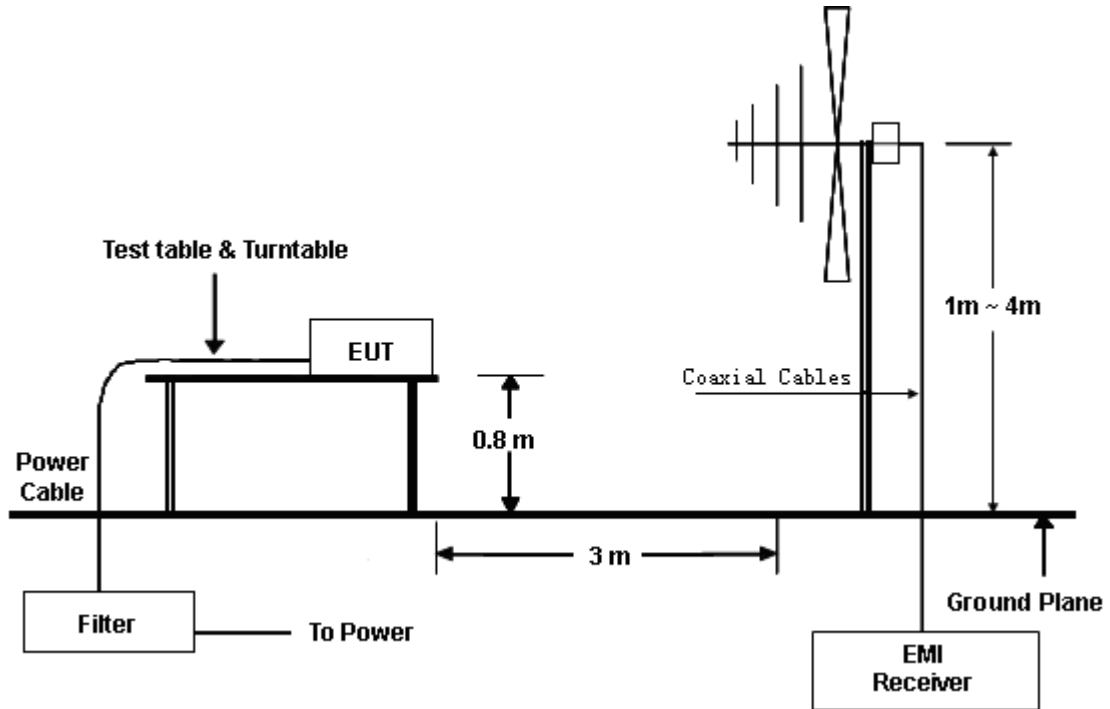
NOTE: The lower limit shall apply at the transition frequencies.

4.2.2 TEST PROCEDURE

- (1) The EUT was placed on a non-metallic table, 80 cm above the ground plane inside an semi-anechoic chamber.
- (2) Test antenna was located 3m (see note) from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to CISPR 11 on radiated emission test.
- (3) Spectrum frequency from 30MHz to 1GHz was investigated.
- (4) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to CISPR 11 on Radiated Emission test.
- (5) For emissions from 30MHz to 1GHz, Quasi-Peak values were measured with EMI Receiver and the bandwidth of Receiver is 120 KHz.

4.2.3 TEST SETUP

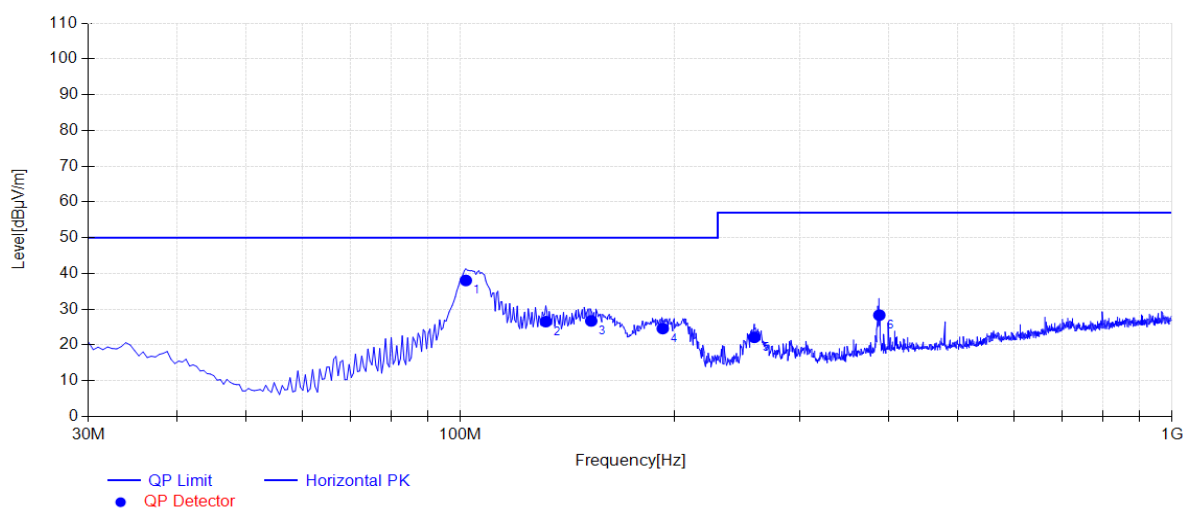
30MHz-1000MHz



4.2.4 TEST RESULTS

Model:	NFAST 96	Polarity:	Horizontal
Temp./Hum.(%RH):	22 °C, 55 %	Power supply:	AC 230V/50Hz
Test by:	Mark Xia	Date:	2020/10/13

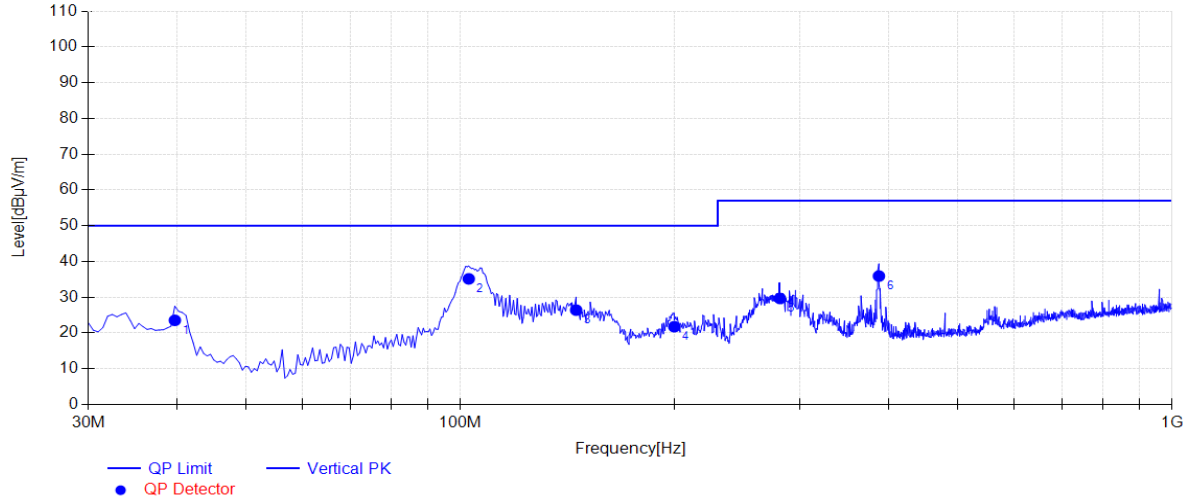
EUT Operation Mode: Mode 1



Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	101.7800	10.98	38.04	50.00	11.96	200	280	Horizontal
2	131.8500	11.65	26.53	50.00	23.47	200	301	Horizontal
3	152.7050	10.54	26.72	50.00	23.28	200	292	Horizontal
4	192.4750	9.16	24.59	50.00	25.41	100	71	Horizontal
5	258.9200	11.87	22.14	57.00	34.86	200	261	Horizontal
6	387.9300	15.94	28.34	57.00	28.66	200	9	Horizontal

Model:	NFAST 96	Polarity:	Vertical
Temp./Hum.(%RH):	22 °C, 55 %	Power supply:	AC 230V/50Hz
Test by:	Mark Xia	Date:	2020/10/13

EUT Operation Mode: Mode 1



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	39.7000	15.25	23.54	50.00	26.46	100	19	Vertical
2	102.7500	11.00	35.13	50.00	14.87	100	1	Vertical
3	145.4300	11.35	26.40	50.00	23.60	100	222	Vertical
4	199.7500	9.00	21.76	50.00	28.24	200	9	Vertical
5	281.2300	12.61	29.65	57.00	27.35	200	359	Vertical
6	387.4450	15.92	35.92	57.00	21.08	200	349	Vertical

4.3 HARMONICS CURRENT MEASUREMENT

4.3.1 LIMITS

Limits for class A equipment		Limits for class D equipment		
Harmonics Order n	Max. permissible harmonics current A	Harmonics Order n	Max. permissible harmonics current per watt mA/W	Max. permissible harmonics current A
Odd harmonics		Odd Harmonics only		
3	2.30	3	3.4	2.30
5	1.14	5	1.9	1.14
7	0.77	7	1.0	0.77
9	0.40	9	0.5	0.40
11	0.33	11	0.35	0.33
13	0.21	13	0.30	0.21
15<=n<=39	0.15x15/n	15<=n<=39	3.85/n	0.15x15/n
Even harmonics				
2	1.08			
4	0.43			
6	0.30			
8<=n<=40	0.23x8/n			

NOTE:

1. Class A and class D are classified according to item 4.3.3.
2. According to section 7 of EN 61000-3-2, the above limits for all equipment except for Mode 1 equipment having an active input power > 75 W and no limits apply for equipment with an active input power up to and including 75 W.

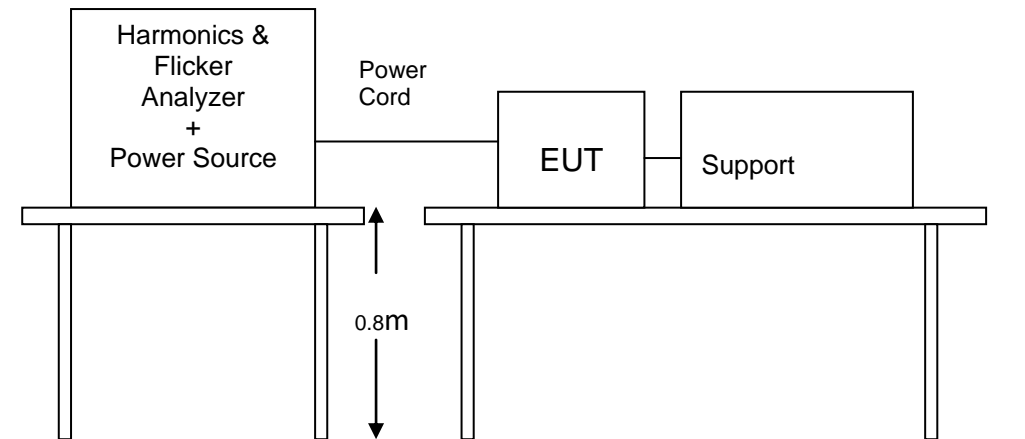
4.3.2 TEST PROCEDURE

The EUT was placed on the top of a wooden table 0.1 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.

The EUT is classified as follows:

Class A	Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.
Class B	Portable tools; Arc welding equipment which is not professional equipment.
Class C	Mode 1 equipment
Class D	Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television receivers. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

4.3.3 TEST SETUP



4.3.4 TEST RESULTS

This equipment is dedicated to the laboratory, not directly connected to public low-voltage distribution systems, so not assessed.

4.4 VOLTAGE FLUCTUATION AND FLICKS MEASUREMENT

4.4.1 LIMITS

Test standard: EN 61000-3-3

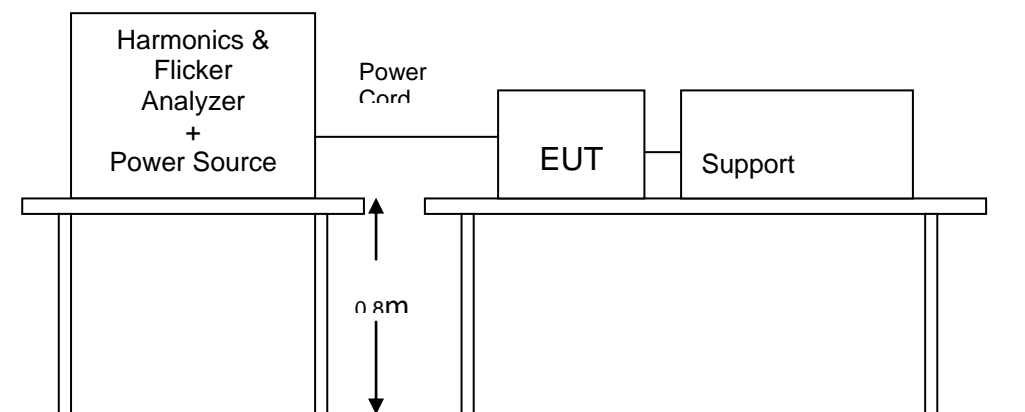
Test Item	Limit	Remark
P_{st}	1.0	P_{st} means short-term flicker indicator.
P_{lt}	0.65	P_{lt} means long-term flicker indicator.
T_{dt} (ms)	500	T_{dt} means maximum time that dt exceeds 3 %.
d_{max} (%)	4%,6%,7%	d_{max} means maximum relative voltage change.
dc (%)	3.3%	dc means relative steady-state voltage change

4.4.2 TEST PROCEDURE

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.

During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

4.4.3 TEST SETUP



4.4.4 Test result

This equipment is dedicated to the laboratory, not directly connected to public low-voltage distribution systems, so not assessed.

5. IMMUNITY TEST

5.1 ELECTROSTATIC DISCHARGE

5.1.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-2
Discharge Voltage	Air Discharge: ± 8 kV; Contact Discharge: ± 4 kV;
Polarity	Positive & Negative
Number of Discharge	Minimum 20 times at each test point
Discharge Mode	Single Discharge 1 second minimum

5.1.2 TEST PROCEDURE

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 for each pre-selected test point. This procedure was repeated until all the air discharge completed.

Contact Discharge:

All the procedure was same as air discharge. Except that the generator was re-triggered for a new single discharge and repeated 50 times for each pre-selected test point. The tip of the discharge electrode was touching the EUT before the discharge switch was operated.

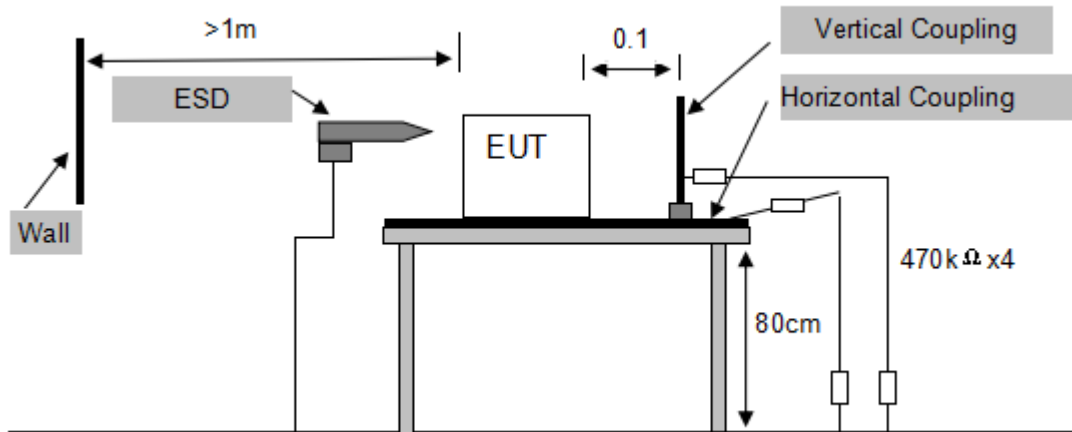
Indirect discharge for horizontal coupling plane:

At least 20 single discharges 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.

Indirect discharge for vertical coupling plane:

At least 20 single discharges 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.

5.1.3 TEST SETUP



NOTE:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m * 0.8m) was placed on the ground and attached to the GRP by means of a cable with 940kΩ total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of 1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

5.1.4 TEST RESULTS

EUT Name:	Nucleic Acid Extractor	Model:	NFAST 96
Test Mode:	Mode 1	Environmental Conditions:	26.0°C 56%RH101kPa
Test Date:	2020/10/14	Tested By:	Mark Xia

Discharge point	Discharge voltage	C-Contact A-Air	Required Performance	Actual performance	Result
Screen, Button, Gap	±2kV, ±4kV, ±8kV	Air	Criterion B	Criterion A ^{a)}	PASS
Metal Shell	±2kV, ±4kV	Contact	Criterion B	Criterion A ^{a)}	PASS
Vertical coupling plane	±2kV, ±4kV	Contact	Criterion B	Criterion A ^{a)}	PASS
Horizontal coupling plane	±2kV, ±4kV	Contact	Criterion B	Criterion A ^{a)}	PASS
NOTE: ^{a)} There was no change compared with initial operation during the test.					

5.2 RADIATED RADIO-FREQUENCY ELECTROMAGNETIC FIELD

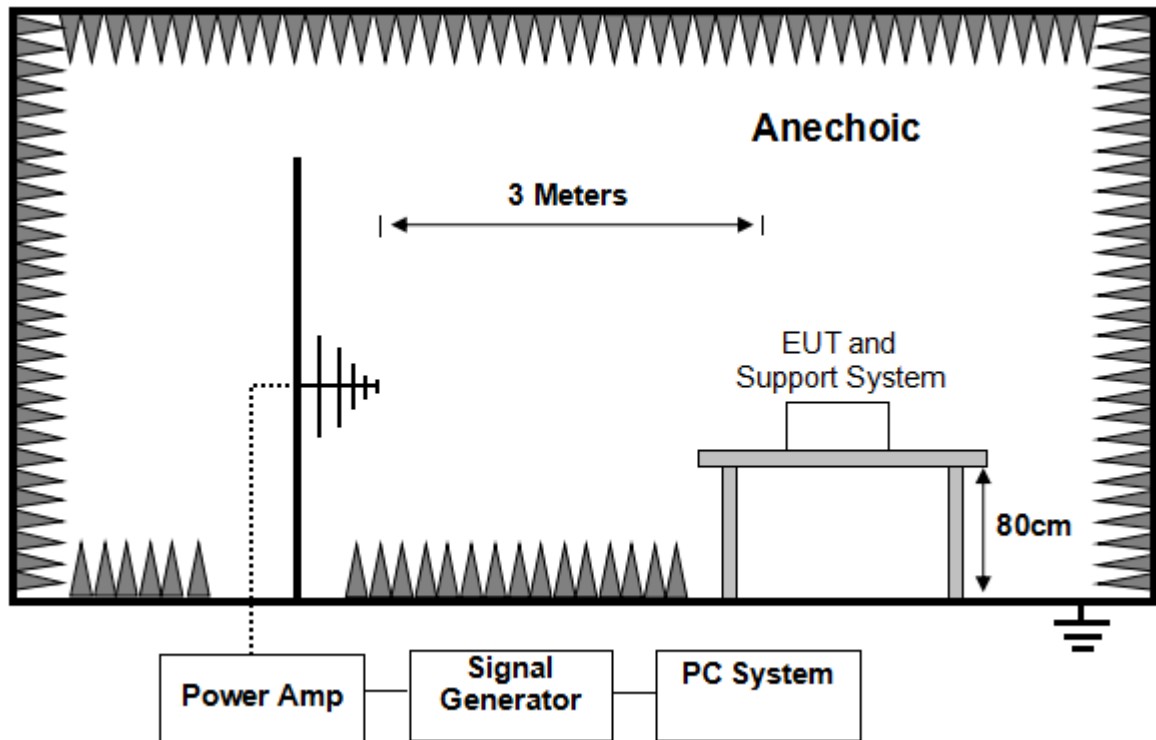
5.2.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-3
Frequency Range	80MHz~1000MHz, 1.4GHz~2GHz, 2GHz~2.7GHz
Field Strength	3V/m, 3V/m, 1V/m
Modulation	1kHz Sine Wave, 80%, AM Modulation
Frequency Step	1 % of preceding frequency value
Polarity of Antenna	Horizontal and Vertical
Test Distance	3 m
Antenna Height	1.5m

5.2.2 TEST PROCEDURE

- 1) The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- 2) The frequency range is swept from 80MHz to 6000MHz with the signal 80% amplitude modulated with a 1kHz sine-wave. the step size was 1% of preceding frequency value.
- 3) The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- 4) The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

5.2.3 TEST SETUP



5.2.4 TEST RESULTS

EUT Name:	Nucleic Acid Extractor	Model:	NFAST 96
Test Mode:	Mode 1	Environmental Conditions:	26.0°C 56%RH101kPa
Test Date:	2020/10/08	Tested By:	Mark Xia

Frequency (MHz)	Field Strength (V/m)	Polarity	Azimuth	Required Performance	Actual performance	Result
80MHz ~1000 MHz	3V/m	V&H	Front	Criterion A	Criterion A ^{a)}	PASS
		V&H	Rear	Criterion A	Criterion A ^{a)}	PASS
		V&H	Left	Criterion A	Criterion A ^{a)}	PASS
		V&H	Right	Criterion A	Criterion A ^{a)}	PASS

NOTE: ^{a)} There was no change compared with initial operation during the test.

Frequency (MHz)	Field Strength (V/m)	Polarity	Azimuth	Required Performance	Actual performance	Result
1.4GHz~2GHz	3V/m	V&H	Front	Criterion A	Criterion A ^{a)}	PASS
		V&H	Rear	Criterion A	Criterion A ^{a)}	PASS
		V&H	Left	Criterion A	Criterion A ^{a)}	PASS
		V&H	Right	Criterion A	Criterion A ^{a)}	PASS

NOTE: ^{a)} There was no change compared with initial operation during the test.

Frequency (MHz)	Field Strength (V/m)	Polarity	Azimuth	Required Performance	Actual performance	Result
2.0GHz~2.7GHz	1V/m	V&H	Front	Criterion A	Criterion A ^{a)}	PASS
		V&H	Rear	Criterion A	Criterion A ^{a)}	PASS
		V&H	Left	Criterion A	Criterion A ^{a)}	PASS
		V&H	Right	Criterion A	Criterion A ^{a)}	PASS

NOTE: ^{a)} There was no change compared with initial operation during the test.

5.3 ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

5.3.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-4
Test Voltage	1 kV
Polarity	Positive and Negative
Impulse Frequency	5 kHz
Impulse Wave-shape	5 ns/50ns for voltage
Burst Duration	15 ms
Burst Period	300 ms
Test Duration	2 minute

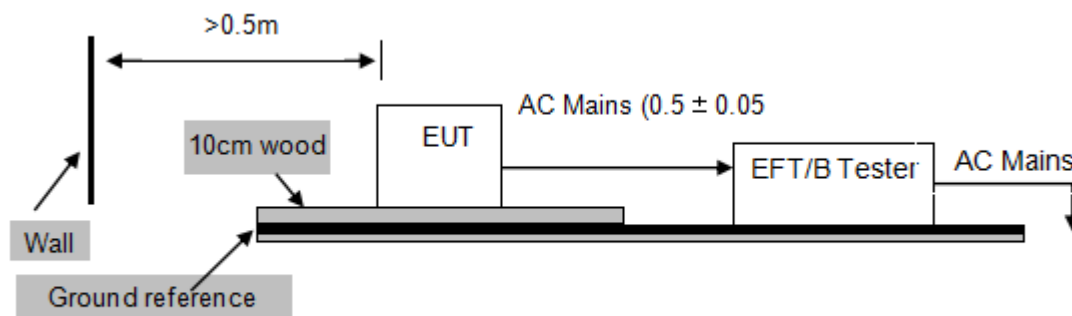
5.3.2 TEST PROCEDURE

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 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.

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.

5.3.3 TEST SETUP



5.3.4 TEST RESULTS

EUT Name:	Nucleic Acid Extractor	Model:	NFAST 96
Test Mode:	Mode 1	Environmental Conditions:	26.0°C 56%RH101kPa
Test Date:	2020/10/14	Tested By:	Mark Xia

Inject Line	Polarity	Inject method	Repetition frequency	Required Performance	Actual performance	Result
L	±1kV	Direct	5kHz	Criterion B	Criterion A ^{a)}	PASS
N	±1kV	Direct	5kHz	Criterion B	Criterion A ^{a)}	PASS
PE	±1kV	Direct	5kHz	Criterion B	Criterion A ^{a)}	PASS
L-N	±1kV	Direct	5kHz	Criterion B	Criterion A ^{a)}	PASS
L-PE	±1kV	Direct	5kHz	Criterion B	Criterion A ^{a)}	PASS
N-PE	±1kV	Direct	5kHz	Criterion B	Criterion A ^{a)}	PASS
L-N-PE	±1kV	Direct	5kHz	Criterion B	Criterion A ^{a)}	PASS

NOTE: ^{a)} There was no change compared with initial operation during the test.

5.4 SURGE IMMUNITY TEST

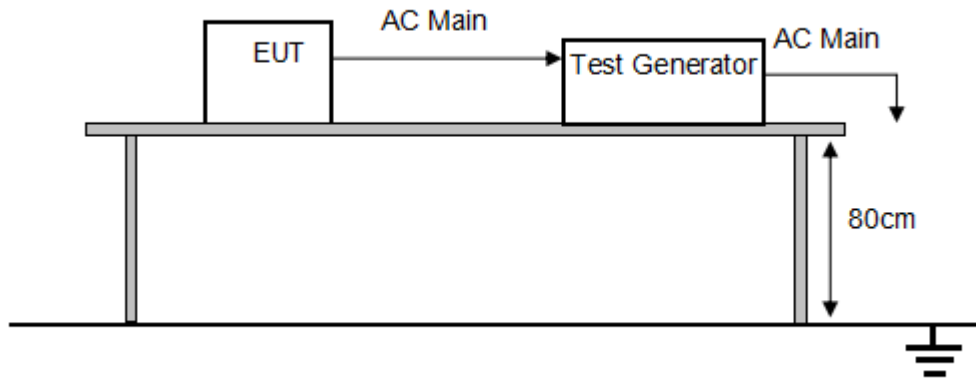
5.4.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-5
Wave-Shape	Combination Wave 1.2/50 μ s Open Circuit Voltage 8/20 μ s Short Circuit Current
Test Voltage	L-L: \pm 0.5kV L-PE: \pm 1kV
Generator Source Impedance	Line to line 2ohm Line to PE 12ohm
Polarity	Positive and Negative
Phase Angle	0 °:90 °:180 °:270 °
Pulse Repetition Rate	1 minute

5.4.2 TEST PROCEDURE

- 1) For EUT power supply:
- 2) The surge is applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.
- 3) For test applied to unshielded un-symmetrically operated interconnection lines of EUT:
- 4) The surge was applied to the lines via the capacitive coupling. The coupling / decoupling networks didn't influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.
- 5) For test applied to unshielded symmetrically operated interconnection / telecommunication lines of EUT:
- 6) The surge was applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor were not specified.

5.4.3 TEST SETUP



5.4.4 TEST RESULTS

EUT Name:	Nucleic Acid Extractor	Model:	NFAST 96
Test Mode:	Mode 1	Environmental Conditions:	26.0°C 56%RH101kPa
Test Date:	2020/10/15	Tested By:	Mark Xia

Test Point	Polarity	Pulse Voltage	Required Performance	Actual performance	Result
L-N	+	0.5kV	Criterion B	Criterion A ^{a)}	PASS
	-	0.5kV	Criterion B	Criterion A ^{a)}	PASS
L-PE	+	1kV	Criterion B	Criterion A ^{a)}	PASS
	-	1kV	Criterion B	Criterion A ^{a)}	PASS
N-PE	+	1kV	Criterion B	Criterion A ^{a)}	PASS
	-	1kV	Criterion B	Criterion A ^{a)}	PASS

NOTE: a) There was no change compared with initial operation during the test.

5.5 INJECTED CURRENTS SUSCEPTIBILITY TEST

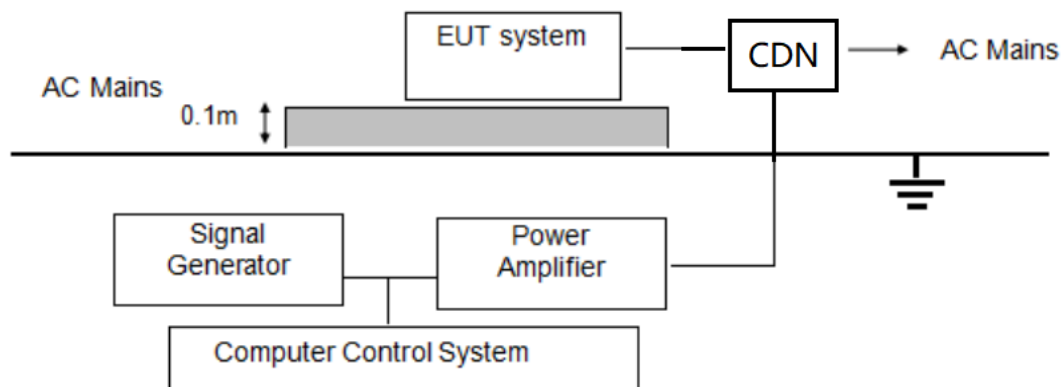
5.5.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-6:2008
Frequency Range	0.15 MHz~80 MHz
Field Strength	3 V
Modulation	1 kHz, 80% AM
Frequency Step	1%
Dwell Time	1s

5.5.2 TEST PROCEDURE

- 1) Set up the EUT, CDN and test generators as shown on Section 5.5.3
- 2) Let the EUT work in test mode and measure it.
- 3) The EUT 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 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 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 150 kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
- 7) 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 testing and decide the EUT immunity criterion.

5.5.3 TEST SETUP



5.5.4 TEST RESULTS

EUT Name:	Nucleic Acid Extractor	Model:	NFAST 96
Test Mode:	Mode 1	Environmental Conditions:	26.0°C 56%RH101kPa
Test Date:	2020/10/15	Tested By:	Mark Xia

Frequency Band (MHz)	Field Strength (V.rms)	Cable	Injection Method	Required Performance	Actual performance	Result (P/F)
0.15-80	3 V	AC port	CDN	Criterion A	Criterion A ^{a)}	PASS

NOTE: ^{a)} There was no change compared with initial operation during the test.

5.6 VOLTAGE DIP & VOLTAGE INTERRUPTIONS

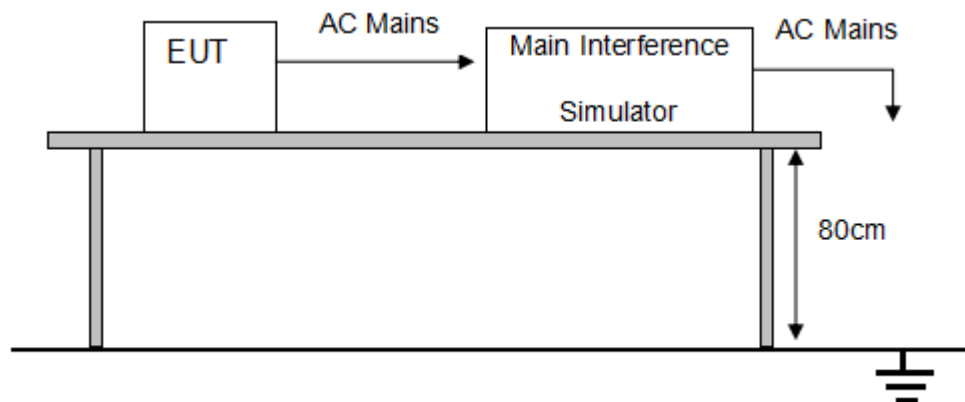
5.6.1 TEST SPECIFICATION

Basic Standard	IEC 61000-4-11
Test duration time	<u>Voltage dips:</u> 0% during 1 periods, Meets the requirements of Performance Criterion B 0% during 0.5 periods, Meets the requirements of Performance Criterion B 70% during 25 periods, Meets the requirements of Performance Criterion C <u>Voltage interruption:</u> 0% during 250 cycles, Meets the requirements of Performance Criterion C
Phase Angle	0-360 °
Test cycle	3

5.6.2 TEST PROCEDURE

- 1) The EUT and test generator were setup as shown on Section 5.6.3.
- 2) The interruptions is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

5.6.3 TEST SETUP



5.6.4 TEST RESULTS

EUT Name:	Nucleic Acid Extractor	Model:	NFAST 96
Test Mode:	Mode 1	Environmental Conditions:	26.0°C 56%RH101kPa
Test Date:	2020/10/16	Tested By:	Mark Xia

Test level %U _T	Voltage Dip & Interruptions %U _T	Duration (Period)	Required Performance	Actual performance	Result
70%	30%	25T	Criterion C	Criterion A ^{a)}	PASS
0%	100%	0.5T	Criterion B	Criterion A ^{a)}	PASS
0%	100%	1T	Criterion B	Criterion A ^{a)}	PASS
0%	100%	250T	Criterion C	Criterion C ^{b)}	PASS

NOTE: ^{a)} There was no change compared with initial operation during the test.

^{b)} After the voltage interruption, click the run button, EUT is working properly.

5.7 POWER FREQUENCY MAGNETIC FIELD

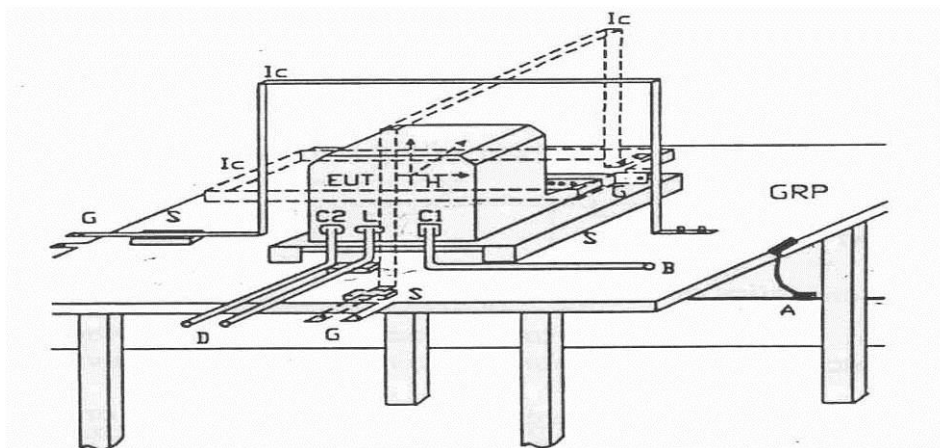
5.7.1 TEST SPECIFICATION

Basic Standard:	IEC 61000-4-8
Test Level:	3A/m
During Time:	5 minutes

5.7.2 TEST PROCEDURE

- a) The EUT and test generator were setup as shown on Section 5.7.3.
- b) Set the required test level and test during time, let the EUT work in test mode and measure it.
- c) Record any degradation of performance.

5.7.3 TEST SETUP



5.7.4 TEST RESULTS

EUT Name:	Nucleic Acid Extractor	Model:	NFAST 96
Test Mode:	Mode 1	Environmental Conditions:	26.0°C 56%RH101kPa
Test Date:	2020/10/14	Tested By:	Mark Xia

Inductive Coil Position	Test Level	Required Passing Performance	Actual performance	Result
X	3A/m	Criterion A	Criterion A ^{a)}	PASS
Y	3A/m	Criterion A	Criterion A ^{a)}	PASS
Z	3A/m	Criterion A	Criterion A ^{a)}	PASS

NOTE: ^{a)} There was no change compared with initial operation during the test.

APPENDIX A. PHOTOGRAPHS OF EUT



Photo 1: General view



Photo 2: General view



Photo 3: Top view



Photo 4: Side view



Photo 5: USB port view



Photo 6: Switch view

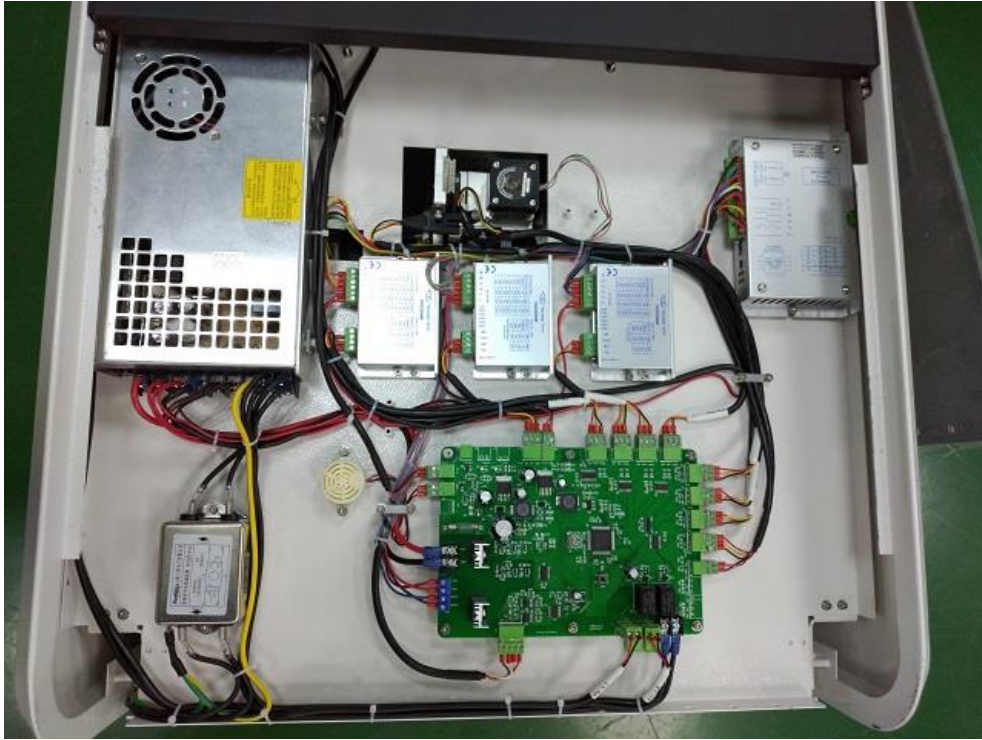


Photo 7: Internal view



Photo 8: Internal view



Photo 9: Power Switch view

APPENDIX B: PHOTOGRAPH OF THE TEST ARRANGEMENT



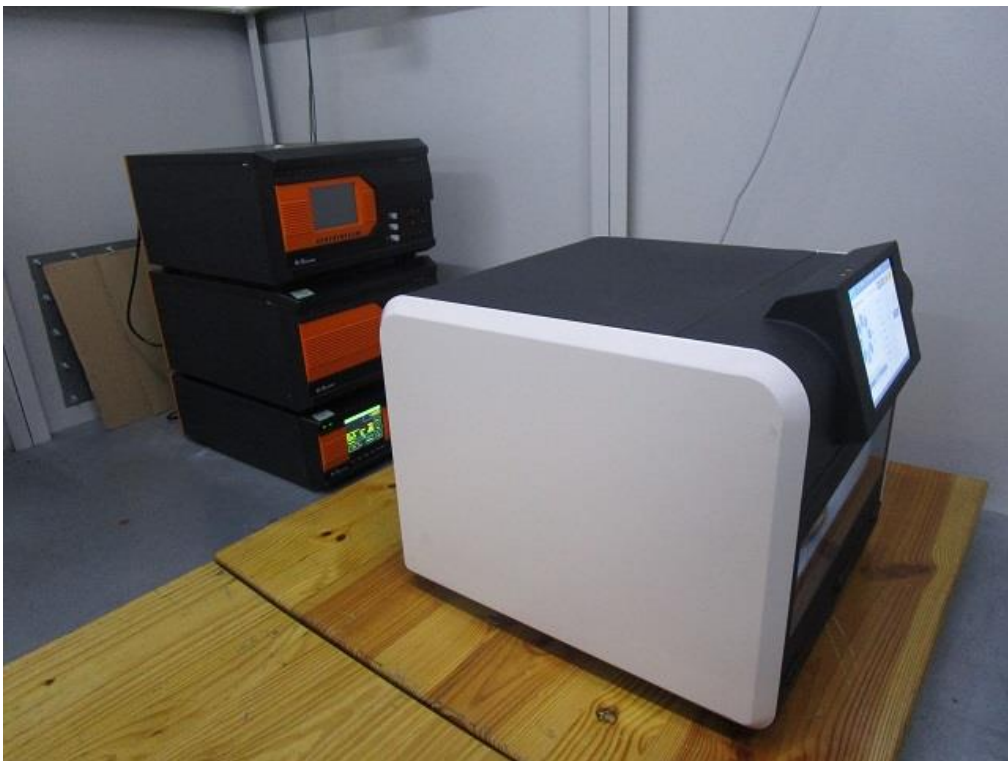
CE



RE



ESD



EFT



SURGE



CS



DIP



RS



PFMF

APPENDIX C: PERFORMANCE CRITERIA

<p>Criteria A</p>	<p>The equipment 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 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, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.</p>
<p>Criteria B</p>	<p>The equipment 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 equipment 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. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.</p>
<p>Criteria C</p>	<p>Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.</p>

--END--