सुक्ष्म, लघु एवं मध्यम उद्यम
MICRO, SMALL & MEDIUM ENTERPRISES
MSME - TECHNOLOGY DEVELOPMENT CENTRE
MUMBAI

TEST REPORT

Cert. No. T-1358

Accreditation Field: Electrical Testing
Accreditation Valid upto: 01.01.2017
Work Order No. : WO/ETL/087/16-17
Date : 13.09.2016

NABL Accreditation No.: T-1358
Test Report No. :TR/ETL/150/16-17
Date of Testing : 26.09.2016 to 05.10.2016

Test Item : Dual Channel Alpha Beta Radiation Counter

Tested for : M/s. Electronic Enterprises (India) Pvt. Ltd.,
306, Nimesh Indl. Estate,90 Feet Cross Road, Mulund (E), Mumbai - 400 081, Maharashtra, India

Tested at : IDEMI MUMBAI

Specification of Items under test	Specification of Standards Used
Manufacturer : M/s. Electronics Enterprises (India) Pvt. Ltd., Mumbai	1 Vibration Test System (Digital Vibration Controller With PCB Charge Accelerometer) Model No.: SEV 360, SPARK USB Calibration Validity : July 2017
Condition of Item on Reciept : Good	2 Environmental Chamber Model: ETC 1000 Calibration Validity : May 2017
Range /Rating : 230V AC, 50Hz	Traceability: Standard used are traceable to National / International Standards
Sr. No. : 1646	
Model No.: Dual Channel Alpha/Beta Counter	

Ambient Conditions :

Temperature : 15°C ± 35°C Relative Humidity : < 75%

Remarks : Please refer page 2 to 9 for Test Results.

1) Test Specification : The above mentioned item is tested for
1. Vibration test : IS 9000 (Part 8) : 1981
2. Dry heat test : IS 9000 (Part 3): 1977
3. Damp Heat Cyclic Test : IS 9000 (Part 5) : 1981
& as per customer's requirement.

C. M. PATIL
ASST. DIRECTOR
AUTHORISED SIGNATORY

1. EQUIPMENT UNDER TEST (EUT)

1.1. Brief Description

Dual Channel Alpha Beta Counter is a micro-controller based, economical, stand alone, mains operated instrument for Dual Channel Nuclear Counting application for Alpha – Beta radiations. It is a versatile instrument designed to cater the counting application requirements

Dual Channel Alpha Beta Counter uses Composite Detector (Plastic Scintillator and ZnS(Ag) Scintillator) for detection and measurement of alpha / beta radiation

It is useful for radiation counting for Health Physics applications in radioisotope laboratories, nuclear reactors, nuclear power plants, nuclear medicine centers etc.

1.2 Operating condition & set parameters

During Vibration Test

- EUT is energized with 230V AC, 50 Hz
- The composite detector is connected to the EUT through coaxial cable.
- The following parameters are set
  Time : 1800 sec.
  Run : 1
- 'Run' Mode is selected & the counter is started.

During Dry Heat Test

- EUT is energized with 230V AC, 50 Hz
- The composite detector is connected to the EUT through coaxial cable.
- The following parameters are set
  Time : 60 seconds
  Run : 1

During Damp Heat Cyclic Test

- EUT is kept in non-energized condition.
- The composite detector is connected to the EUT through coaxial cable.

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1.3 Performance Check before, during & after Vibration test

- The Dual Channel Alpha Beta Radiation Counter should not get switch OFF or There should not be any malfunctioning in operation.
- During 1800 sec the alpha counts should not exceed 10 counts.
- During 1800 sec the beta counts should not exceed 300 counts.

Performance Check before, during & after Dry Heat test

- The Dual Channel Alpha Beta Radiation Counter should not get switch OFF or There should not be any malfunctioning in operation.
- At the time of taking readings 'Run' Mode is selected & the counter is started. During each counting interval of 60Seconds, Alpha counts should not exceed 2 counts & beta counts should not exceed 10 counts

Performance Check before, during & after Damp Heat Cyclic Test

- At the time of taking readings EUT is energized with 230V, 50Hz AC supply.
- The following parameters are set
  Time : 60 seconds
  Run : 1
- 'Run' Mode is selected & the counter is started.
- During each counting interval of 60Seconds, Alpha counts should not exceed 2 counts & beta counts should not exceed 10 counts

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2. VIBRATION TEST

a. Test Specifications

Test method	: As per IS 9000(Part 8):1981 & Customer's requirement
Waveform	: Sinusoidal
Frequency	: 21 Hz, 33Hz
Acceleration	: 2 gn
Direction	: X, Y, Z axis
Duration	: 15 Minutes at each frequency.
EUT condition	: EUT condition as per Sr. No. 1.2

b. Requirement :

The performance of the EUT shall be normal as per Sr. No. 1.3

c. Observation :

Visual inspection was carried out, No mechanical weakness was observed during & after test. The Alpha & Beta counts were found to be within limit.

Parameters	X Axis		Y Axis		Z Axis	
Frequency	21Hz	33Hz	21Hz	33Hz	21Hz	33Hz
Alpha Count	001	001	003	003	001	001
Beta Count	088	051	115	070	085	050

d. Result :

Complied

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3. DRY HEAT TEST

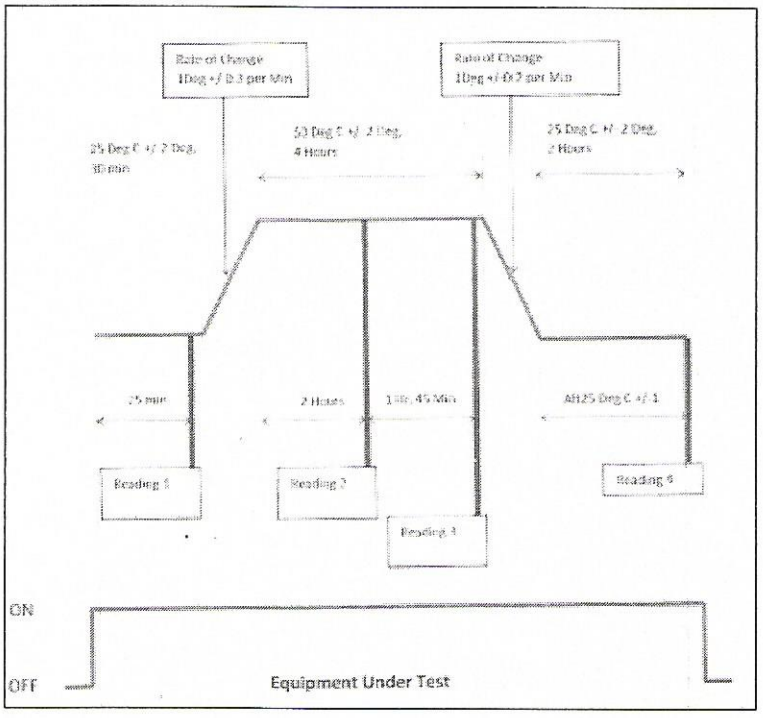
a. Test Rationale:

To determine of the ability of components, equipment or other articles to be used, transported or stored at high temperature.

b. Test Condition:

Test Standard	:	As per IS 9000(Part 3):1977 & customer's requirement
Temperature	:	50 °C
Temperature Cycle	:	As per figure 'a'
Duration	:	4 hours
EUT condition	:	EUT Condition as per Sr. No. 1.2

Figure 'a'



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c. Requirement

The Performance shall be normal as per sr. no. 1.3

d. Observation

The functional test was carried out as per 1.3.The performance of the EUT was found to be satisfactory.

Parameters	Reading 1	Reading 2	Reading 3	Reading 4
Date	29.09.2016	29.09.2016	29.09.2016	29.09.2016
Time	9.50 AM	12.15 PM	2.00 PM	4.25 PM
Temperature	25°C	50.2°C	51.1°C	25.1°C
Humidity	<50%	<50%	<50%	<50%
Alpha Counts	000	000	000	000
Beta Counts	001	004	006	006

e. Result:

Complied.

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Sr. No. : 1646
Date of Testing : 26.09.2016 to 05.10.2016

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4. DAMP HEAT CYCLIC TEST

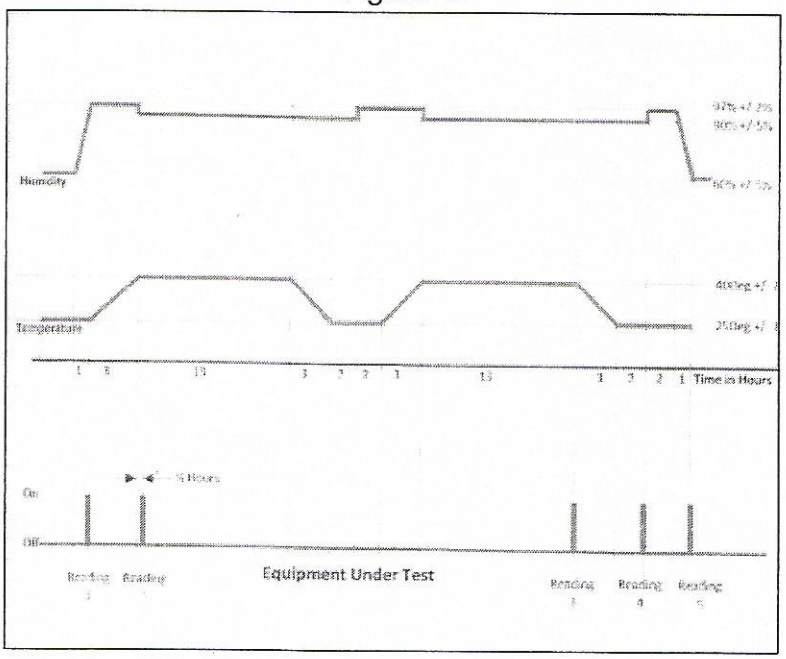
a. Test Rationale:

To determine the suitability of components, equipment or other articles for use, transportation and storage under conditions of high humidity – combined with cyclic temperature changes and, in general, producing condensation on the surface of the specimen.

b. Test Condition:

Test Standard	:	As per IS 9000(Part 5):1981 & customer's requirement
Lower Temperature	:	25 °C
Humidity	:	97%
Higher Temperature	:	40 °C
Humidity	:	90%
No. of Cycle	:	2 Cycle
Duration of Cycle	:	24 Hours (12+12hr. cycle as per figure 'b')
EUT condition	:	EUT Condition as per Sr. no. 1.2

Figure 'b'



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c. Requirement

The performance shall be normal as per sr. no. 1.3

d. Observation

The functional test was carried out as per 1.3.The performance of the EUT was found to be satisfactory.

Parameters	Reading 1	Reading 2	Reading 3	Reading 4	Reading 5
Date	03.10.2016	03.10.2016	05.10.2016	05.10.2016	05.10.2016
Time	6.00 PM	9.00 PM	9.00 AM	2.00 PM	5.00 PM
Temperature	25.0°C	39.0°C	40.0°C	25.0°C	24.9°C
Humidity	96.0%	88.0%	90.1%	95.3%	59.4%
Alpha Counts	000	000	000	000	000
Beta Counts	006	002	003	000	003

e. Result:

Complied.

TESTED BY

CHECKED BY