

EMI/EMC Test Report

Report Reference No.....	AAEMT/EMC/210816-04
Applicant's name.....	ENERSOL Systems PVT. LTD.
Address	510, PACE CITY 2, SECTOR-37, GURGAON-122001
Manufacture's Name.....	ENERSOL Systems PVT. LTD.
Address	510, PACE CITY 2, SECTOR-37, GURGAON-122001
Test item description:	
Product name.....	MULTI FUNCTION METER
Trademark	ENERSOL
Model and/or type reference	MFR-2810
Serial Number:	302882
Standards.....	IEC 61000-4-4:2012
Testing Laboratory information:	
Testing Laboratory Name	AA Electro Magnetic Test Laboratory Private Limited
Address	Plot No 174, Udyog Vihar - Phase 4, Sector 18, Gurgaon, Haryana, India
<p>This device described above has been tested by AA Electro Magnetic Test Laboratory Private Limited, and the test results show that the equipment under test (EUT) is in compliance with the mentioned requirements. And it is applicable only to the tested sample identified in the report.</p> <p>This report shall not be reproduced except in full, without the written approval of AA Electro Magnetic Test Laboratory Private Limited, this document can be altered or revised by AA Electro Magnetic Test Laboratory Private Limited, personal only, and shall be noted in the revision of the document.</p>	
Testing	
Date of receipt of test item	Aug. 16, 2021
Date (s) of performance of tests.....	Aug. 17, 2021
Date of Issue.....	Aug. 18, 2021
Test Result	Pass
Declaration of Conformity:	Declaration of conformity of the results is based as per the standard limits.
Compiled by (+ signature) Mayank Pandey:	
Authorized & Reviewed by (+ signature) Dr. Lenin Raja:	
Issued by (+ signature) Bittu Kumar:	



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2 Test Summary

Test	Test Requirement	Test Method	Limits	Criterion	Result
EFT	IEC 61000-4-4:2012	IEC 61000-4-4:2012	+/-4 kV on AC Line (Level 4)	B	PASS

N/A is an abbreviation for Not Applicable.
Model description: N/A



Performance criterion	During the test	After the test
A	During and after the test the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a minimum performance level specified by the manufacturer when the EUT 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 EUT if used as intended.	During and after the test the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a minimum performance level specified by the manufacturer when the EUT 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 EUT if used as intended.
B	During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. 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 EUT if used as intended.	After the test, the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance.
C	During and after testing, a temporary loss of function is allowed, provided the function is self recoverable, or can be restored by the operation of the controls or cycling of the power to the EUT by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.	During and after testing, a temporary loss of function is allowed, provided the function is self recoverable, or can be restored by the operation of the controls or cycling of the power to the EUT by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

Particular performance criteria

The particular performance criteria which are specified in the normative annexes take precedence over the corresponding parts of the general performance criteria.

Where particular performance criteria for specific functions are not given, then the general performance criteria shall apply.

Product documentation

The specification used by the manufacturer to define the performance criteria for the testing required by this standard shall be made available to the user upon request.



2.1 Measurement Uncertainty

The report uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

No.	Item	Frequency Range	U , Value
1	N/A	N/A	N/A



3 Test Facility

The test facility is recognized, certified or accredited by the following organizations:

ILAC / NABL Accreditation No.: TC-8597

Three 3m Semi-Anechoic Chamber, 1 full-Anechoic chamber and 2 Shielding Rooms of AA Electro Magnetic Test Laboratory Private Limited have been registered by National Accreditation Board for Testing and Calibration Laboratories (NABL).

ILAC –A2LA Accreditation No.: 5593.01

Three 3m Semi-Anechoic Chamber, 1 full-Anechoic chamber and 2 Shielding Rooms of AA Electro Magnetic Test Laboratory Private Limited have been registered American Association of Laboratory Accreditation (A2LA.)

FCC- Recognition No.: 137777

Three 3m Semi-Anechoic Chamber, 1 full-Anechoic chamber and 2 Shielding Rooms of AA Electro Magnetic Test Laboratory Private Limited have been registered by Federal Communications Commission (FCC).

ISED Recognition No.: 26046

Three 3m Semi-Anechoic Chamber, 1 full-Anechoic chamber and 2 Shielding Rooms of AA Electro Magnetic Test Laboratory Private Limited have been registered by Institute for Social and Economic Development.(ISED)

VCCI- Registration No: 4053

Three 3m Semi-Anechoic Chamber, 1 full-Anechoic chamber and 2 Shielding Rooms of AA Electro Magnetic Test Laboratory Private Limited have been registered by Voluntary Control Council for Interference.(VCCI)

TEC Designation No.: IND063

Three 3m Semi-Anechoic Chamber, 1 full-Anechoic chamber and 2 Shielding Rooms of AA Electro Magnetic Test Laboratory Private Limited have been registered by Telecommunication Engineering (TEC) Center.

BIS Recognition No: 816586

BIS recognized as per CRS scheme for IT electronics, LED control gears, Lamp, Inverter / UPS are recognized as per LRS 2020.

3.1 Deviation from standard

None

3.2 Abnormalities from standard conditions

None



4 General Information

4.1 General Description of EUT

Manufacturer:	ENERSOL Systems PVT. LTD.
Manufacturer Address:	510, PACE CITY 2, SECTOR-37, GURGAON-122001
EUT Name:	MULTI FUNCTION METER
Model No:	MFR-2810
Serial Number:	302882
Brand Name:	ENERSOL
H/W No.:	Version 4
S/W No.:	Version 4
Power Supply Range:	Input for EUT: 90-300VAC
Battery:	No

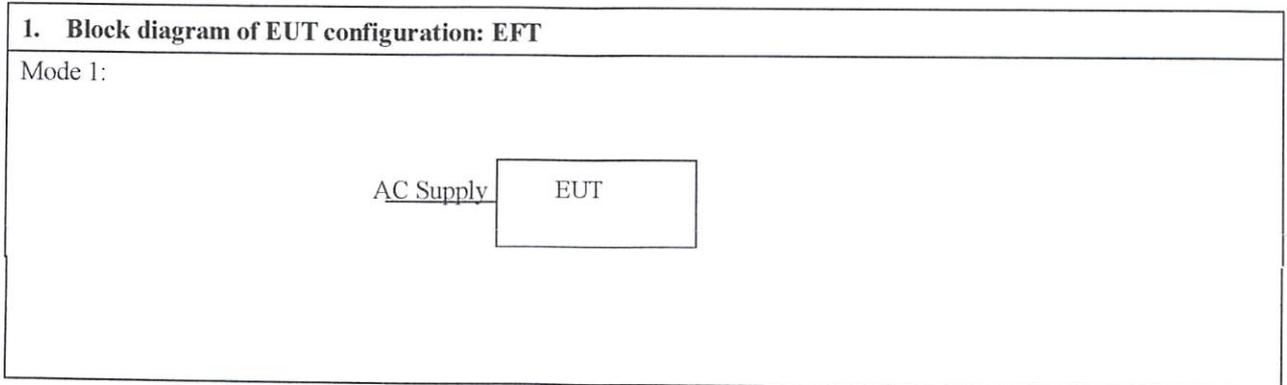


4.2 EUT Test Mode

Mode 1	The EUT was fully functional.
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4.3 Description of Test setup

EUT was tested in normal configuration (Please See following Block diagrams)



4.4 Test Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	signal cable
1.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2.	N/A	N/A	N/A	N/A	N/A	N/A	N/A

4.5 EUT Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	signal cable
1.	N/A	N/A	N/A	N/A	N/A	N/A	N/A



5 Equipment's List for All Test Items

<input checked="" type="checkbox"/> EFT/B Test equipment						
No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Compact Immunity simulator	3ctest	CCS 600	ES0801819	2021/01/13	2022/01/13
2	Capacitance coupling clamp	3ctest	CCC 100	CCC-18100179	2021/01/28	2022/01/27



6 Immunity Test Results

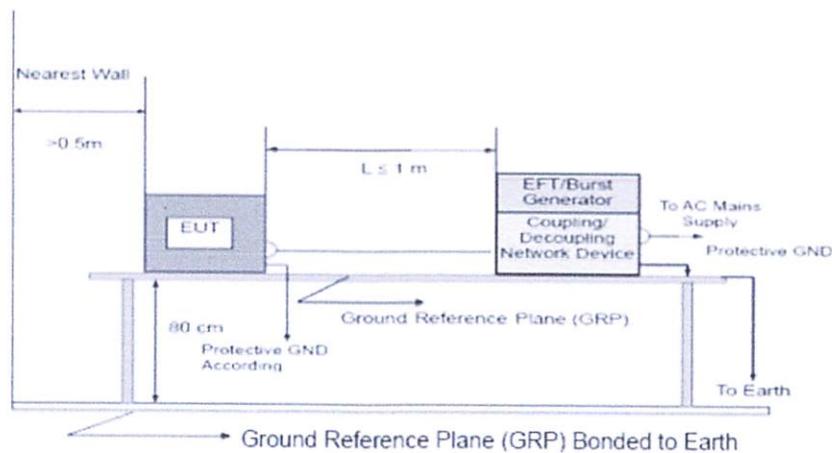
6.1 Electrical fast transient/burst immunity test

Acceptable Performance Criterion:	B
Applicable Standard:	IEC 61000-4-4: 2012
Test Level:	+/-4 kV on AC Line (Level 4)
Repetition Frequency:	100 kHz
Burst Duration:	300 ms
Test Duration:	1 minutes for each level & polarity

6.1.1 E.U.T. Operation

Temperature:	25.1°C	Humidity:	55% RH	Atmospheric Pressure:	96.8	Kpa
Test Mode:	Mode 1 & 2					

6.1.2 Test specification



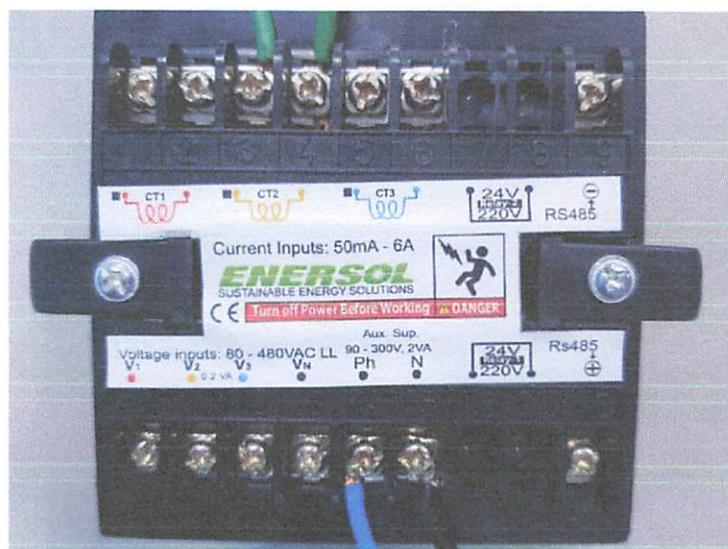
EUT was placed on a metal ground reference plane and was insulated from it by a wooden support which is 0.1m thick. The ground reference plane is connected to the protective earth. The test generator and the coupling/decoupling network were placed directly on, and bonded to the ground reference plane.

6.1.3 Measurement Data

Electrical Fast Transient/Burst Result											
M/N:	MFR-2810				Test Result: <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail						
Test Voltage:	AC 220V, 50Hz				Test date: 2021-08-17						
Test Mode:	Mode i										
Test Signal	Rise time: 5ns, Duration: 50ns, repetition rate : <input type="checkbox"/> 5KHz <input checked="" type="checkbox"/> 100KHz										
Coupling Line	Test level (kV)								Required Performance Criterion	Result	
	0.5		1		2		4				
	+	-	+	-	+	-	+	-			
AC line	L	A	A	A	A	A	A	A	A	B	Pass
	N	A	A	A	A	A	A	A	A		Pass
	L+N	A	A	A	A	A	A	A	A		Pass
	PE	-	-	-	-	-	-	-	-		Pass
	L+PE	-	-	-	-	-	-	-	-		Pass
	N+PE	-	-	-	-	-	-	-	-		Pass
	L+N+PE	-	-	-	-	-	-	-	-		Pass
<p>Note: 1. During the test no deviation was detected to the selected operation mode(s). 2. L = Line, N = Neutral. 3. Neutral is not a Ground, it is also considered as Line conductor. 4. The Submitted device don't have any physical / protective earthing point.</p>											



6.1.4 Test Setup Photograph



(Rear view of EUT)

****End of the Report****

For AA Electro Magnetic Test Laboratory

[Signature]
Authorised Signatory

