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TEST REPORT

NAME AND ADDRESS OF CUSTOMER: Ashida Electronics Pvt. Ltd., Plot No. A-308, Road No.21, Wagle Industrial Estate, Thane-400604 Maharashtra, India.	**REPORT NO.:** RP-1617-049427 **DATE** : 24/01/2017 **CUSTOMER REF. NO.:** Nil **DATED:** 12/01/2017	
	DATE OF SAMPLE RECEIPT	**DATE OF TESTING**
	12/01/2017	17/01/2017
SAMPLE DESCRIPTION: ASHIDA Feeder Protection Relay CT : 1A / 5A PT : 63.5 VAC Freq.: 50 Hz / 60 Hz Aux Supply = 24 V to 230 V AC/DC	**SAMPLE IDENTIFICATION:** **Sr. No:** 16L245M0001 **Platform:** ADR24xB-M **ERDA Sample Code No.:** ERDA-00177845	
Accessories used: • Doble - Model no.:F6150, Sr. No.: 060803068 • Laptop		
TEST DETAILS Conducted emission	**TEST SPECIFICATION:** As per customer requirements & test procedure followed as per Cl. No. 7.1.3 IEC 60255-26: 2013	

Notes:
1) Only Electromagnetic emission test (Conducted emission test in 'non-operate' condition of EUT) has been carried out on DC supply as per customer requirement.
2) Operating procedure/conditions during the test & performance/acceptance criteria of the sample under test as specified by the customer are mentioned on sheet no. 2 & 3 of this report.
3) The list of the major equipments used during the test is mentioned on sheet no.4 of this report.
4) Test set up block diagram is shown on sheet no.5 of this test report.
5) Photograph of test set up and sample description mention on EUT is shown on sheet no.13 & 14 of this test report

REMARK: The sample conforms to the requirement as specified by the customer for the above-mentioned test.

WITNESSED BY: Mr. Prashant Patil - Ashida Electronics Pvt. Ltd., Thane.

		Dr. Vinod Gupta
PREPARED BY	**CHECKED BY**	**APPROVED BY**

Notes: 1. This report relates only to the particular sample received for testing in good condition at ERDA, Vadodara.
2. This report can not be reproduced in part under any circumstances.
3. Publication of this report requires prior permission in writing from the Director, ERDA.
4. Only the test asked for by the customer have been carried out.
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Operating procedure of the sample under test as specified by the customer:

Sample / Equipment under Test (EUT)

EUT: Feeder Protection Relay

EUT Brief Description:

The EUT is a high performance Enhance Aditya M (Modular) protection relay platform, designed for highly electrical noisy substation environment. Following are some of the feature of this platform:

- High performance 32-Bit processor with Floating point Unit operating at 200MHz
- 8 Analogue input having 16 bit simultaneous sampling ADC, design for CT or PT
- 32 Digital Input / Output extended up to 64 Nos.
- RTD and 4-20mA analogue input
- Dual redundant Ethernet ports
- RS485 port
- 16 dual colour LEDs
- Breaker Close / Trip Push buttons
- Graphical Display

Operating Procedure:

Connect the Input supply 110V DC to the power supply terminal of EUT.

Pick up value Test:

- Connect current source at 1A current to input terminal.
- Set current setting value to 100% i.e. 1A, TMS at Minimum (x0.02) value and Curve setting to C1.
- Start current injector & increase current value till relay get pick up and trip.
- The operating value should be within 1 to 1.1 times of set pickup value.

Operating Time Test:

- Set current 2N i.e. 2A and connect trip contact to timer.
- Change the TMS setting at 1.00.
- Start the current injector and measure the operating time. The trip time value should be within ±12.5% of actual value. (Actual time 10.029 Sec.)

Operating condition during the test:

- EUT shall be in "ON" condition during the test.
- Applied 110 VDC to Auxiliary supply input terminal.
- Applied 63.5 VAC to PT input terminals.
- During test, Set Current value less than trip value (<90%). i.e.0.9 A
- All Binary inputs are energized with 110V DC.
- RS485 communication will be in working condition.

Performance Criteria as specified by customer :

Following parameters should be monitored Before the test.

- 'ENABLE' LED (Green) should be continuously 'ON'.
- Display of EUT should not garbage, reset and hang-up.
- All programmable LEDs (15 Nos. dual colour) should remain OFF.

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Operating procedure/condition of sample during the test specified by the customer:

Continued....

Following parameters of EUT should be checked before the test.

Before the test:

	A Ph. Value	B Ph. Value	C Ph. Value	Earth	Tolerance
Pick Up					1-1.1 Amp
Operating Time (2 Amp)					8.77-11.29 Sec

Condition of EUT during the test as specified by customer:

- EUT shall be tested in 'Non-Operate' condition.

Acceptance criteria as specified by customer:

Limits of Conducted emission as per item 2.1 of Table 2 of clause no. 5.2 of IEC 60255-26:2013 are mentioned below.

Frequency range	**Limits**
0.15 MHz to 0.50 MHz	79 dB(μV) quasi peak 66 dB(μV) average
0.5 MHz to 30 MHz	73 dB(μV) quasi peak 60 dB(μV) average

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LIST OF THE MAJOR EQUIPMENTS USED DURING THE TEST

Sr. No:	Details of equipments used	Specifications	Traceability
1)	ARTIFICIAL MAINS NETWORK • ERDA Sr. No: 13098 • Validity of calibration till date: 07/11/2017	Range: 9 kHz-30 MHz Equivalent circuit:50 Ohm // (5 Ohm +50 μH)	Calibration results are traceable to National/ International standards.
2)	EMI TEST RECEIVER • ERDA Sr. No.13025 • Validity of calibration till date: 15/07/2017	Range:9 kHz to 2750 MHz Level: -38dBμV to +137dBμV. Accuracy: 9kHz to 1000MHz < 1dB.	Calibration results are traceable to National Standard M/S BEL Bangalore.
3)	Relay Test Unit (provided by customer) ▪ Sr. No. 060803068 ▪ Make: Doble ▪ Validity of calibration till date: 03.03.2017	AC Amplitude Accuracy at 50/60 Hz Voltage & Current Sources: Accuracy: Typically 0.02% of Rdg Timers and Triggers Accuracy: ± 0.0005% of Rdg, ± 50μsec.	Calibration results are traceable to National Standards

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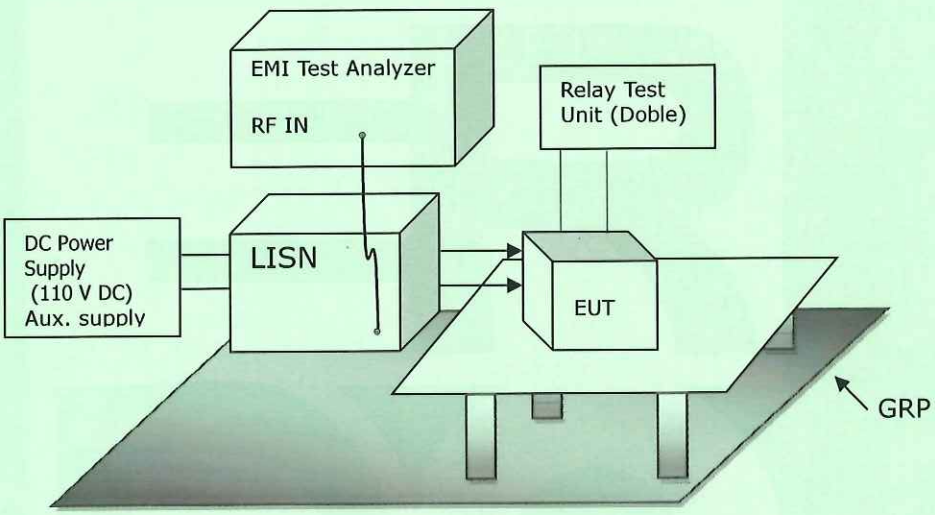

Test set up block diagram for the Conducted emission test (150 kHz – 30 MHz)

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Sr. No.	Particular of test and Cl. No.	Requirement as per customer specifications	Obtained value	Remarks
	Conducted emission as per customer requirements & test procedure followed as per Cl. No. 7.1.3 of IEC 60255-26: 2013	The test for conducted emission shall be carried out for the frequency range, 150 kHz to 30 MHz as per Cl. No. 5.2 & test procedure followed as per Cl. No. 7.1.3 of IEC 60255-26: 2013 Sample shall be tested under 'non-operate' condition as specified by customer. Receiver settings during the test are mentioned below: **Receiver settings:** Frequencies: Start kHz 150, Stop MHz 30, Step kHz 5; IF BW kHz 9; Detector Quasi-Peak and Average	The sample was energized and operated as specified on sheet No. 2 & 3 of this report. The EUT was energized by Auxiliary supply voltage 110V DC and tested under "Non-operate "condition. The performance test was carried out on EUT before test. The obtained values are mentioned on Annexure-I of this report.	Conforms

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Sr. No.	Particular of test and Cl. No.	Requirement as per specifications	Obtained value	Remarks
		The performance test shall be carried out on EUT before test. The limits for the Quasi-peak and Average values of Conducted emission as per item 2.1 of Table 2 of clause no. 5.2 of IEC 60255-26:2013, for the frequency band 150 kHz to 30 MHz are shown in Figure 1, 2, 3 & 4 of this report.	The Quasi-peak and Average values of conducted emissions measured at Positive DC input auxiliary terminals under 'Non-operate' condition of EUT, from 150 kHz to 30 MHz are shown in Figure 1 and 3 respectively of this report which are less than the specified limits. The Quasi-peak and Average values measured at the Negative DC input auxiliary terminals for conducted emissions test under 'Non-operate' condition of EUT, from 150 kHz to 30 MHz are shown in Figure 2 & 4 respectively of this report which are less than the specified limits.	

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Annexure-I

Obtained values

Following parameters of EUT were checked before the test.

Before the test:

	A Ph. Value	B Ph. Value	C Ph. Value	Earth	Tolerance
Pick Up	1.05 A	1.05 A	1.06 A	1.05 A	1-1.1 Amp
Operating Time (2 Amp)	10.05 Sec.	10.06 Sec.	10.07 Sec.	10.70 Sec.	8.77-11.29 Sec

Observed values mentioned above table were found within the specified limits.

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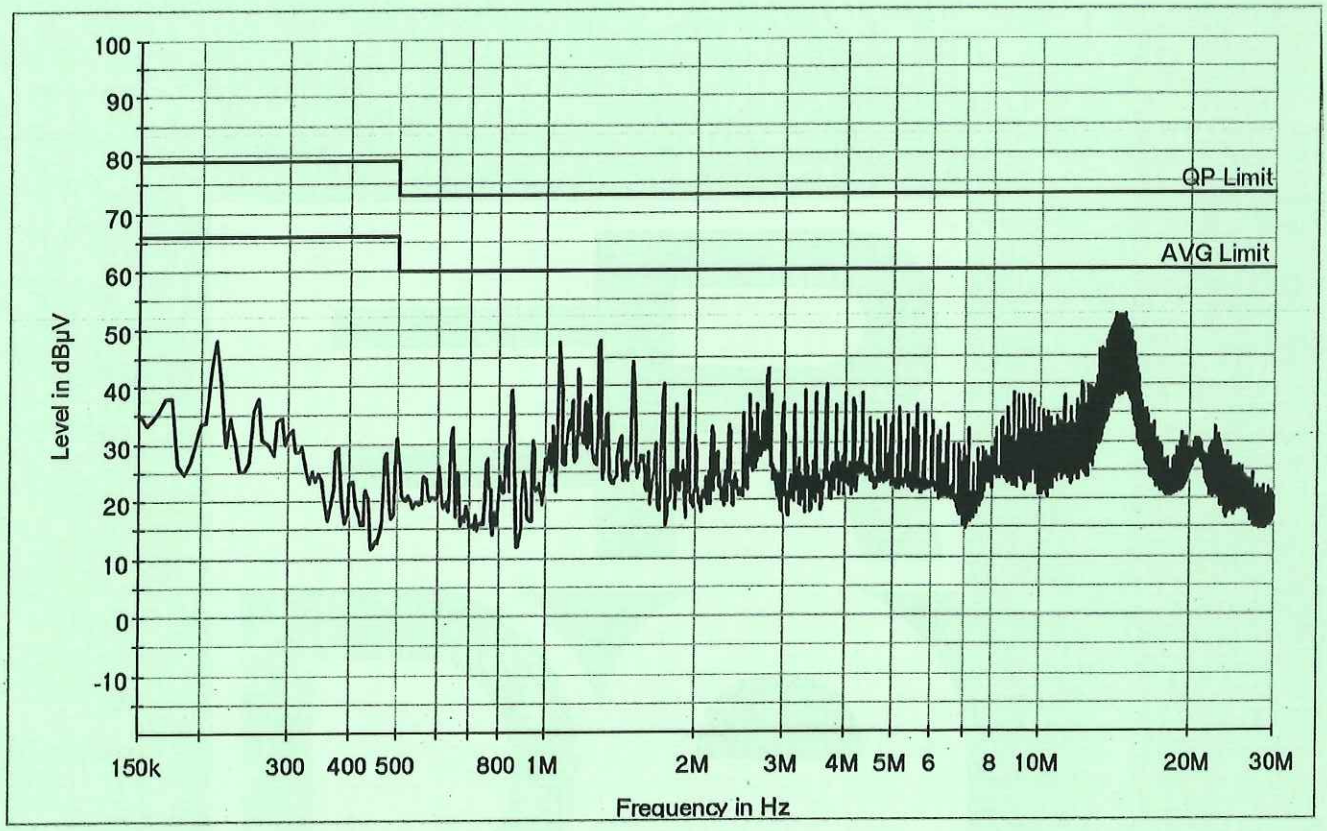

Sample Sr.No.: 16L245M0001
Quasi-peak and Average Limits and Obtained Quasi-peak at Positive (+) DC input terminal

Figure 1

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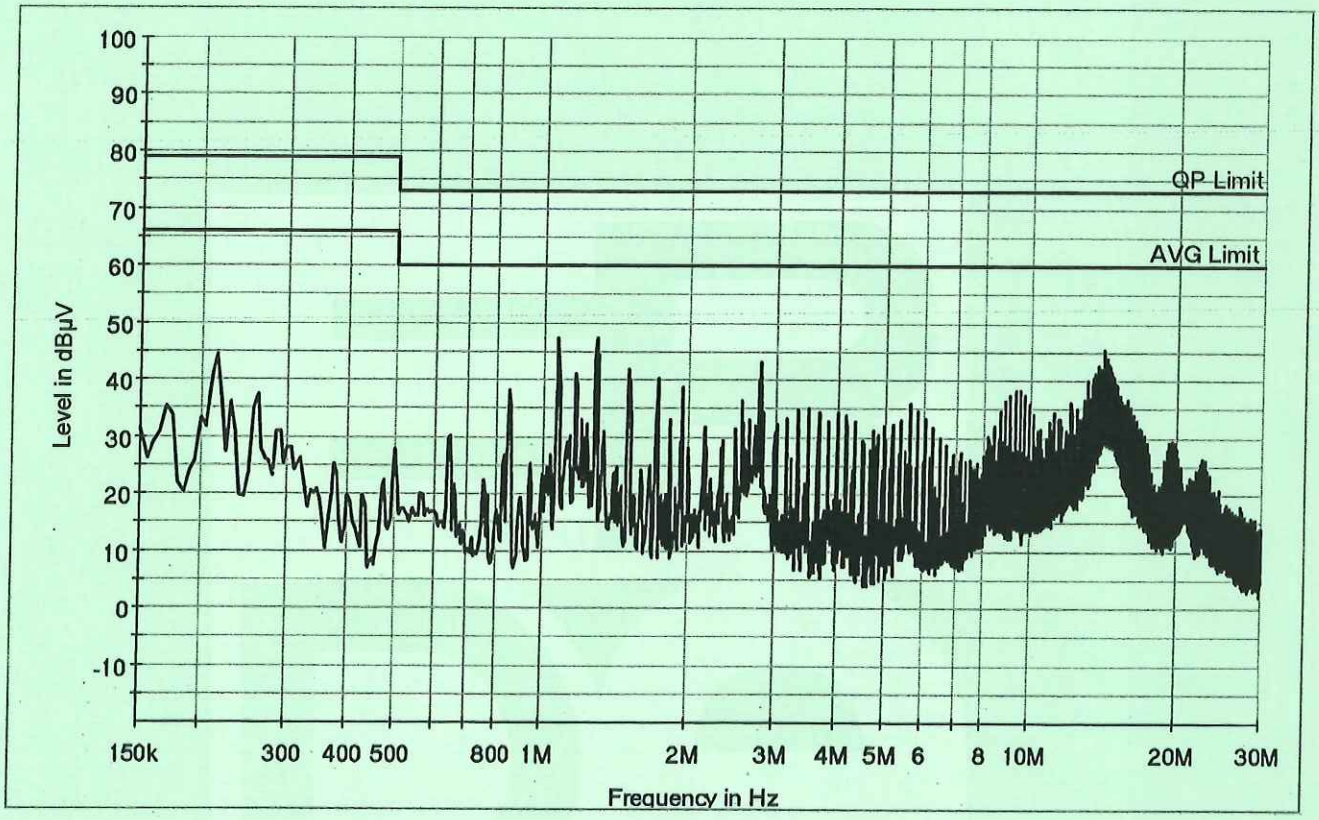

Sample Sr.No.: 16L245M0001
Quasi-peak and Average Limits and Obtained Average at Positive (+) DC input terminal

Figure 2

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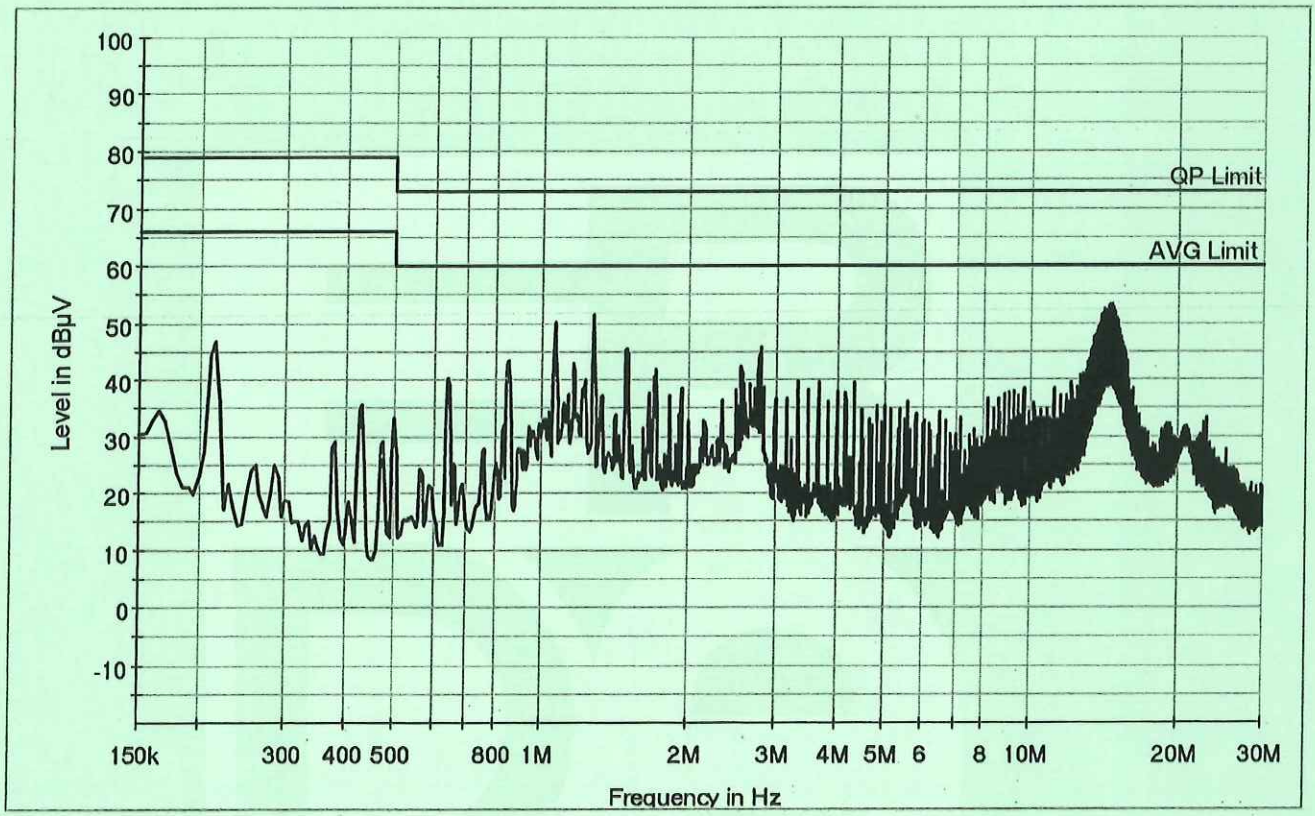

Sample Sr.No.: 16L245M0001
Quasi-peak and Average Limits and Obtained Quasi-peak at Negative (-) DC input terminal

Figure 3

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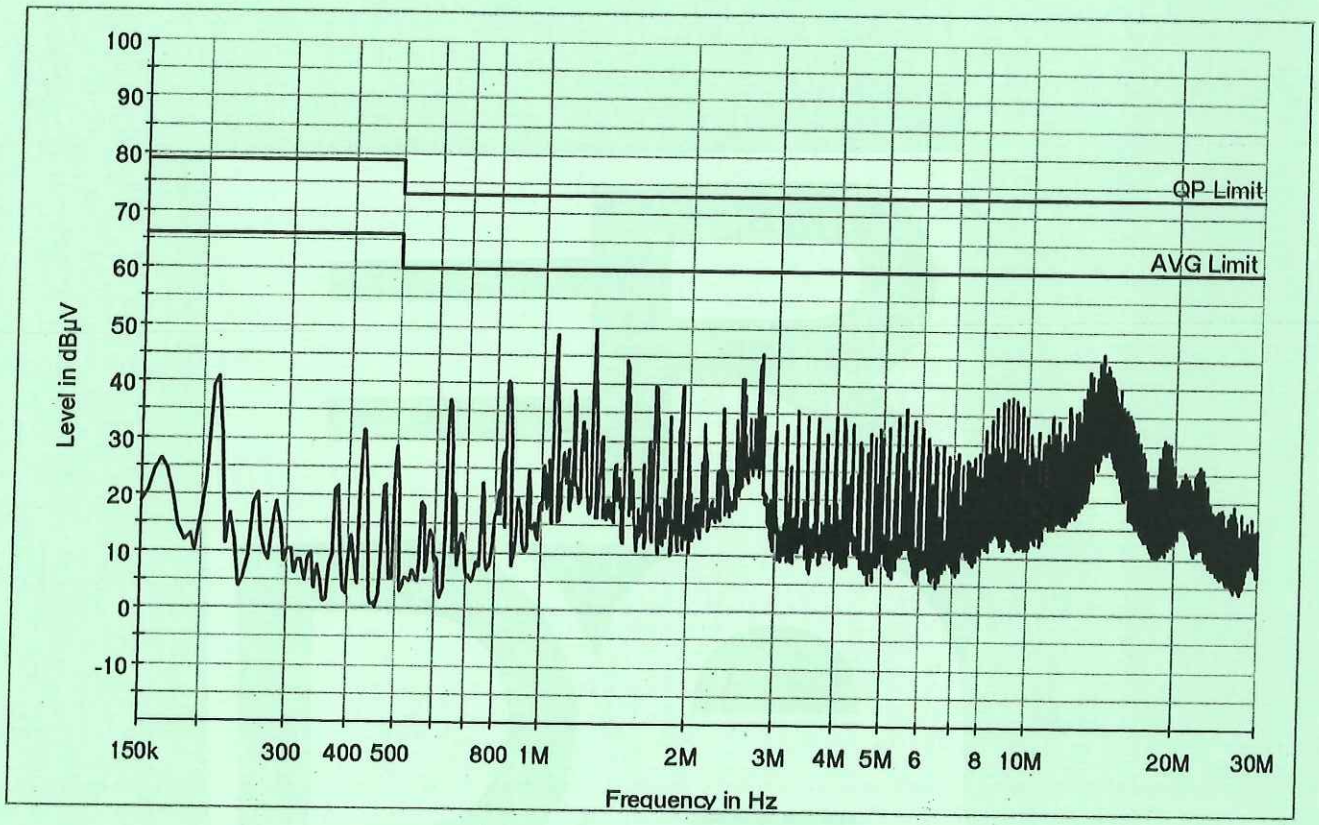

Sample Sr.No.: 16L245M0001
Quasi-peak and Average Limits and Obtained Average at Negative (-) DC input terminal

Figure 4

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Test set up photograph for the Conducted emission test (150 kHz–30 MHz)

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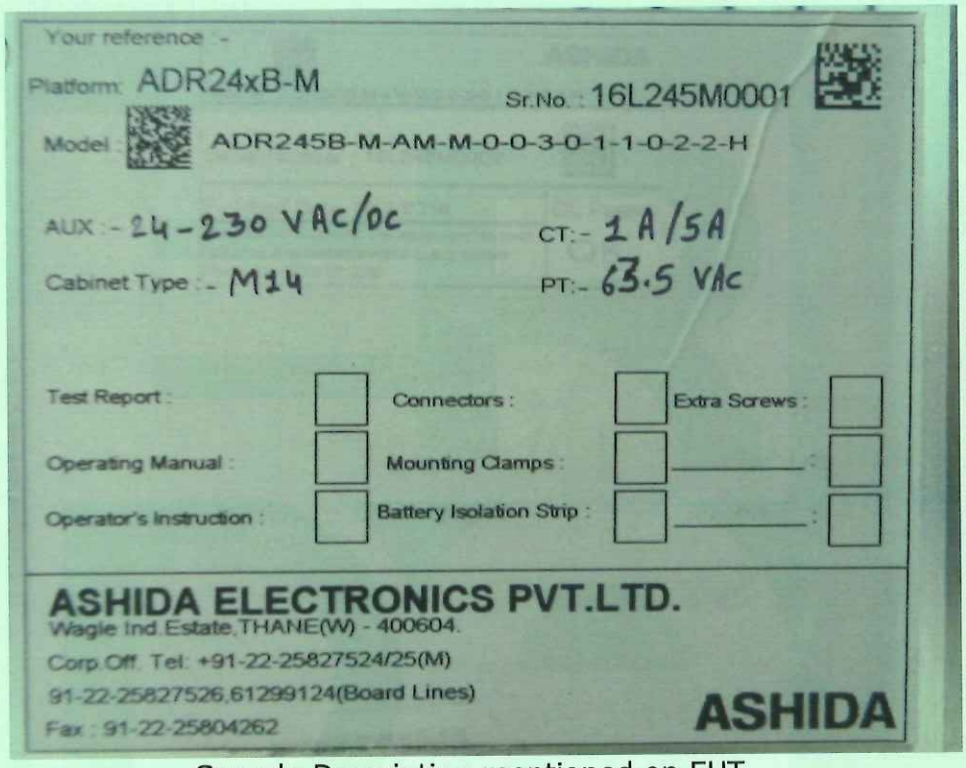

Sample Description mentioned on EUT

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