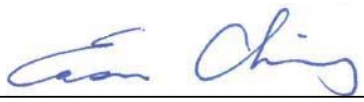
VERIFICATION OF COMPLIANCE

This Verification of Compliance is hereby issued to the product designated below.

Product	**Switching Power Supply**
Model	**DDR-240x-y (x=B, C, D; y=24, 48)**
Trade name	**MEANWELL**
Applicant	**MEAN WELL ENTERPRISES CO., LTD. No.28, Wuquan 3rd Rd., Wugu Dist., New Taipei City 248, Taiwan (R.O.C.)**
Applicable Standard(s)	**EN 50155: 2017, clause 13.4.1, 13.4.2, 13.4.3, 13.4.4, 13.4.5, 13.4.7, 13.4.9 and 13.4.11 EN 61373: 2010, clause 8, 9 and 10 DIN EN 60068-2-11 : 1999, DIN EN 60068-2-1 : 2008-01 DIN EN 60068-2-2 : 2008-05, DIN EN 60068-2-30 : 2006-06**
Report No.	**T180607L01-RL**
Laboratory	**Compliance Certification Services Inc. (Tainan Lab.) No.8,Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)**

The test results are indicated in the test report and are applicable only to the tested sample identified in the report.



Eason Chiang / Section Manager
Tainan Lab
Date: Jul.19.2018

CE

VERIFICATION OF COMPLIANCE

This Verification of Compliance is hereby issued to the product designated below

Product	Din-Rail Switching Power Supply
Model	DDR-240x-y(x=B,C,D;y=24,48)
Brand	MEAN WELL
Applicant	N/A N/A
Applicable Standard(s)	EN50121-3-2:2015*
	Where postfix'*' representative the client require.

Reference No.	C180611E01-ET
Test Laboratory	**Compliance Certification Services Inc.** **Kunshan Laboratory** **No.10 Weiye Rd., Innovation park, Eco&Tec,** **Development Zone, Kunshan City, Jiangsu, China** **Tel: + 86-512-57355888/ FAX: +86-512-57370818**

This device has been tested and found to comply with the stated standards, and fulfills the essential requirement as set out in the article 6. The test results are indicated in the test report and are applicable only to the tested sample identified in the report.

Jeff fang

Jeff.Fang/EMC Manager
Date: August 2, 2018

TEST REPORT
EN 50155
Railway applications – Electronic equipment used on rolling stock

Report No.:	T180607L01-RL
Date of Issue.:	Jul.19.2018
Total number of pages.:	44
Testing laboratory .:	Compliance Certification Services Inc.
Location.:	No.8, Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)
Test Place.:	6 F, No.605, Zhongshan Rd.,Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)
Applicant.:	MEAN WELL ENTERPRISES CO., LTD.
Address:.:	No.28, Wuquan 3rd Rd., Wugu Dist., New Taipei City 248, Taiwan (R.O.C.)
Manufacturer.:	See below
Address:.:	See below
Standards.:	EN 50155: 2017, clause 13.4.1, 13.4.2, 13.4.3, 13.4.4, 13.4.5, 13.4.7, 13.4.9 and 13.4.11 EN50121-3-2:2015* EN 61373: 2010, clause 8, 9 and 10 DIN EN 60068-2-11 : 1999, DIN EN 60068-2-1 : 2008-01 DIN EN 60068-2-2 : 2008-05, DIN EN 60068-2-30 : 2006-06 Where postfix'*' representative the client require.
Test procedure.:	Standard
Non-standard test method.:	N/A
Type of test equipment .:	Switching Power Supply
Trade mark.:	MEANWELL
Model/Type designation.:	DDR-240x-y (x=B, C, D; y=24, 48)
Rating.:	See below
Operating temperature classes..:	OT4

Declaration:

CCS represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (NML) of R.O.C., or National Institute of Standards and Technology (NIST) of U.S.A.

CCS's reports apply only to the specific samples tested under conditions. It is manufacture's res-ponsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components.CCS shall have no liability for any declarations, inferences or generalizations drawn by the client or others from CCS issued reports.

CCS's reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.

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Tested by:	Reviewed by:
Jordan Wang Jordan Wang	**Kasim Fan** Kasim Fan

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Test item particulars:	
Protection against ingress of water……	IPX0
Mass of equipment.(Kg)……..	Approx. 0.66Kg
Testing:	
Date of receipt of test item	Jun.26.2018
Date(s) of performance of tests	Jun.26.2018 to Jul.19.2018
Possible test case verdicts:	
-Test case does not apply to the test object.	N(.A.)
-Test object does meet the requirement.	P(ass)
-Test object does not meet the requirement.	F(ail)
Name and address of factory (ies)	(1) MEAN WELL Enterprises Co., Ltd. No.28, Wuquan 3rd Rd., Wugu Dist., New Taipei City 248, Taiwan (R.O.C) (2) MEAN WELL(GUANGZHOU) ELECTRONICS CO.,LTD. 2nd Floor, No. A Building, Yuean Ind. Park, Dongpu Town, TianHe District, Guangzhou City, P.R. China (3) SuZhou MEAN WELL Technology Co., Ltd. No.77, Jian-min Road, Dong-qiao, Pan-yang Ind. Park, Huang-dai Town, Xiang-cheng District,, Suzhou, Jiangsu 215152, P.R. China
General Remarks:	
The test results presented in this report relate only to the object tested.	
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"(see Enclosure #) refers to additional information appended to the report.	
“(see appended table)” refers to a table appended to the report.	

Comments:

Sample Number: L18060701-00101, L18060701-00102, L18060701-00201, L18060701-00301, L18060701-00302, L18060701-00401, L18060701-00402.

General product information :

1. Model difference : see below.
2. Unless otherwise specified the tests were performed on model : DDR-240B-48, DDR-240C-48 DDR-240D-48

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Model Differences

Model Name	Difference				Brand
	Input Voltage	Input Current	Output Voltage	Output Current	
DDR-240B-24	24Vdc	11.2A	24Vdc	10A	MEANWELL
DDR-240B-48	24Vdc	11.2A	48Vdc	5A	
DDR-240C-24	48Vdc	5.6A	24Vdc	10A	
DDR-240C-48	48Vdc	5.6A	48Vdc	5A	
DDR-240D-24	96/110Vdc	2.5A	24Vdc	10A	
DDR-240D-48	96/110Vdc	2.5A	48Vdc	5A	

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	Jul.19.2018	Original report	All	Kasim Fan

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Table of Testing Summary Results

Item	Description	Test Standard	Verdict
1.1	VISUAL INSPECTION	EN 50155, clause 13.4.1	PASS
1.2	PERFORMANCE TEST (Supply variations)	EN 50155, clause 13.4.2, 5.1.1.2	PASS
1.3	PERFORMANCE TEST (Supply interruption)	EN 50155, clause 13.4.3, 5.1.1.4	PASS
1.4	PERFORMANCE TEST (Supply change over)	EN 50155, clause 13.4.3, 5.1.3	PASS
1.5	INSULATION TEST	EN 50155, clause 13.4.9	PASS
2.1	COOLING TEST	EN 50155, clause 13.4.4 EN 60068-2-1, test Ad.	PASS
2.2	DRY HEAT TEST	EN 50155, clause 13.4.5 EN 60068-2-2, test Be.	PASS
2.3	DAMP HEAT TEST	EN 50155, clause 13.4.7 EN 60068-2-30, test Db.	PASS
2.4	Salt mist test	EN 50155, clause 13.4.10 EN 60068-2-11, test Ka.	PASS
2.5	SHOCK TEST	EN 50155, clause 13.4.11 EN 61373, clause 10	PASS
2.6	VIBRATION TEST (Simulated long-life tests)	EN 50155, clause 13.4.11 EN 61373, clause 9	PASS
2.7	VIBRATION TEST (Function random vibration test)	EN 50155, clause 13.4.11 EN 61373, clause 8	PASS

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1 CHARACTERISTIC TEST

1.1 VISUAL INSPECTION

Product	Switching Power Supply
Model/Type designation	DDR-240x-y (x=B, C, D; y=24, 48)
CCS sample number	L18060701-00101

1.1.1 INSPECTION REQUIRMENT

The Visual inspection test verifies the mechanical, dimensional and appearance conformance of the Electronic Equipment

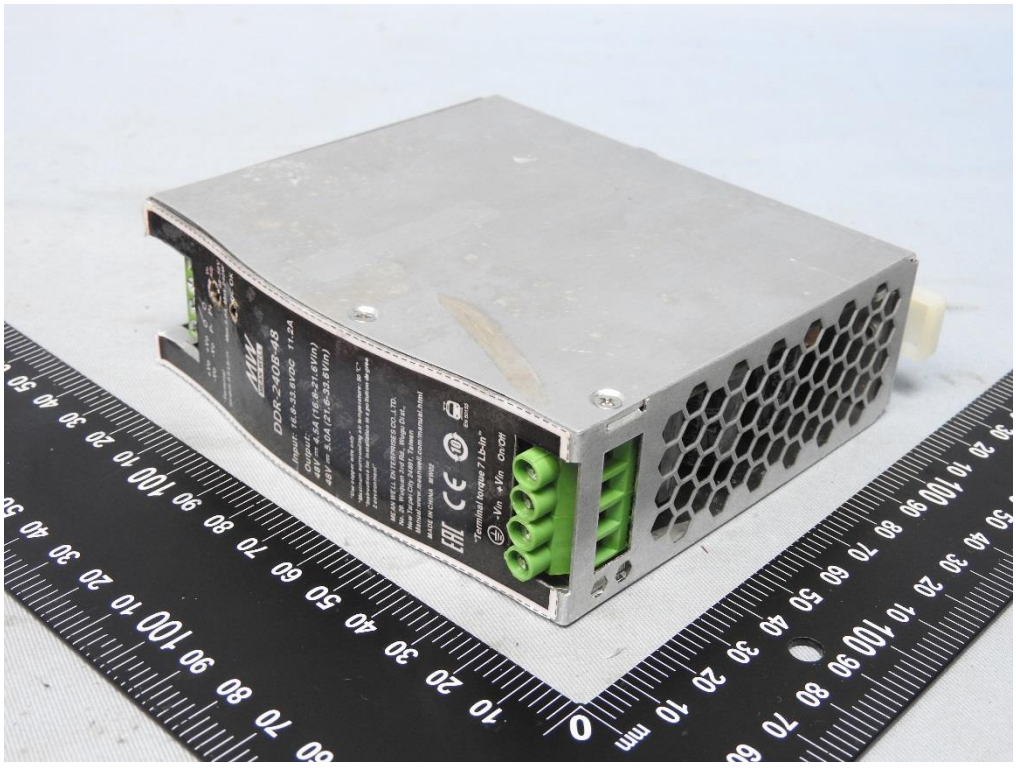
1.1.2 INSPECTION PROCEDURE

The inspection procedure was in accordance with EN 50155 clause 13.4.1

1.1.3 INSPECTION RESULT

PASS

1.1.4 EUT PHOTO



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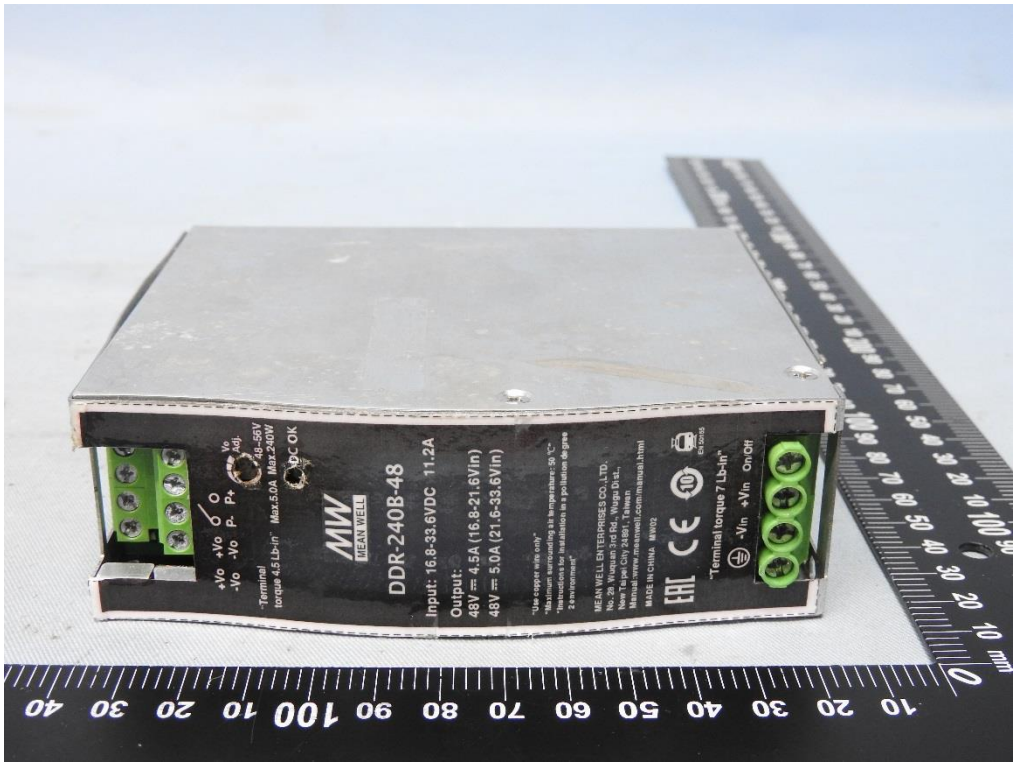

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1.2 PERFORMANCE TEST (Supply variations)

1.2.1 TEST REQUIREMENT

Electronic equipment shall operate satisfactorily for all the values of the DC power supply voltage within the range defined in Table 4 measured at the terminals of the equipment, see also Figure 2.

In case of variation of the power supply voltage from zero to the maximum (e.g. intervention of circuit breaker) the equipment shall neither fail, nor be the cause of failure of other equipment. The equipment shall restart in normal operating mode when the power supply voltage is within the continuous voltage range.

Nominal voltage Un	**Limits**
Minimum continuous voltage:	0.7Un
Maximum continuous voltage:	1.25Un

Electronic equipment shall operate for the values of the DC power supply voltage within the fluctuation range defined in Table 5 measured at the terminals of the equipment, see also Figure 3.

Voltage fluctuation can be either positive (overvoltage) or negative (dips). Temporary supply over voltages lying between Un and 1,4 Un and not exceeding 0,1 s shall not cause deviation of function (performance criterion A).

Temporary supply over voltages lying between 1,25 Un and 1,4 Un and not exceeding 1 s shall fulfil performance criterion B.

Temporary supply dips lying between Un down to 0,6 Un and not exceeding 0,1 s shall not cause deviation of function (performance criterion A).

Nominal voltage Un	**Limits**
Minimum continuous voltage:	0.6Un
Maximum continuous voltage:	1.4Un

1.2.2 TEST INSTRUMENT

Name of Equipment	**Manufacturer**	**Model**	**Calibration Due**
Digital Multimeter	FLUKE	15B	2019.01.31
Digital Phosphor Oscilloscope	Tektronix	DPO 2024B	2019.02.21
Thermo Recorder	T&D	TR-73U	2019.04.25

1.2.3 TEST PROCEDURE

The test procedure was in accordance with EN 50155 clause 13.4.2, 5.1.1.2

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1.2.4 TEST RESULTS

Temperature	24.9℃	Humidity	63.3%RH
Pressure	1006.4mbar	Test by	Xindian Lab. Kevin Wang
Test Results		PASS	

Input Voltage(Un)	Test voltage		Test times	Result / Observation
DDR-240B-24				
24Vdc	0.6Un	14.4Vdc	0.1s	Normal operation
24Vdc	0.7Un	16.8Vdc	10mins	Normal operation
24Vdc	Un	24.0Vdc	10mins	Normal operation
24Vdc	1.25Un	30.0Vdc	10mins	Normal operation
24Vdc	1.4Un	33.6Vdc	0.1s	Normal operation
24Vdc	1.4Un	33.6Vdc	1s	Normal operation
DDR-240B-48				
24Vdc	0.6Un	14.4Vdc	0.1s	Normal operation
24Vdc	0.7Un	16.8Vdc	10mins	Normal operation
24Vdc	Un	24.0Vdc	10mins	Normal operation
24Vdc	1.25Un	30.0Vdc	10mins	Normal operation
24Vdc	1.4Un	33.6Vdc	0.1s	Normal operation
24Vdc	1.4Un	33.6Vdc	1s	Normal operation
DDR-240C-24				
48Vdc	0.6Un	28.8Vdc	0.1s	Normal operation
48Vdc	0.7Un	33.6Vdc	10mins	Normal operation
48Vdc	Un	48.0Vdc	10mins	Normal operation
48Vdc	1.25Un	60.0Vdc	10mins	Normal operation
48Vdc	1.4Un	67.2Vdc	0.1s	Normal operation
48Vdc	1.4Un	67.2Vdc	1s	Normal operation
DDR-240C-48				
48Vdc	0.6Un	28.8Vdc	0.1s	Normal operation
48Vdc	0.7Un	33.6Vdc	10mins	Normal operation
48Vdc	Un	48.0Vdc	10mins	Normal operation
48Vdc	1.25Un	60.0Vdc	10mins	Normal operation
48Vdc	1.4Un	67.2Vdc	0.1s	Normal operation
48Vdc	1.4Un	67.2Vdc	1s	Normal operation
DDR-240D-24				

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96Vdc	0.6Un	57.6Vdc	0.1s	Normal operation
96Vdc	0.7Un	67.2Vdc	10mins	Normal operation
96Vdc	Un	96.0Vdc	10mins	Normal operation
110Vdc	Un	110.0Vdc	10mins	Normal operation
110Vdc	1.25Un	137.5Vdc	10mins	Normal operation
110Vdc	1.4Un	154.0Vdc	0.1s	Normal operation
110Vdc	1.4Un	154.0Vdc	1s	Normal operation
DDR-240D-48				
96Vdc	0.6Un	57.6Vdc	0.1s	Normal operation
96Vdc	0.7Un	67.2Vdc	10mins	Normal operation
96Vdc	Un	96.0Vdc	10mins	Normal operation
110Vdc	Un	110.0Vdc	10mins	Normal operation
110Vdc	1.25Un	137.5Vdc	10mins	Normal operation
110Vdc	1.4Un	154.0Vdc	0.1s	Normal operation
110Vdc	1.4Un	154.0Vdc	1s	Normal operation

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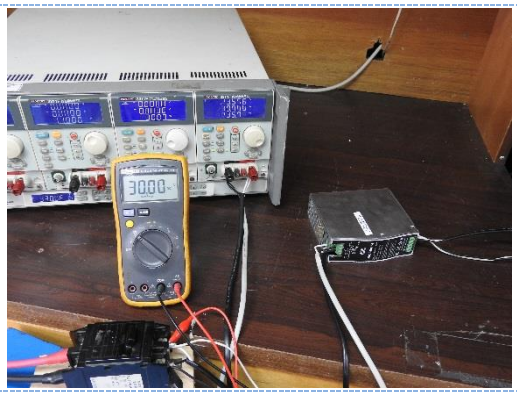
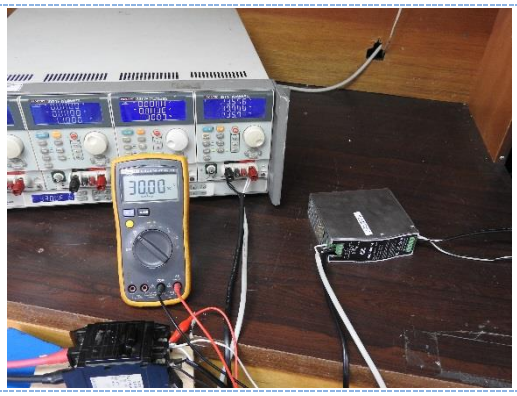
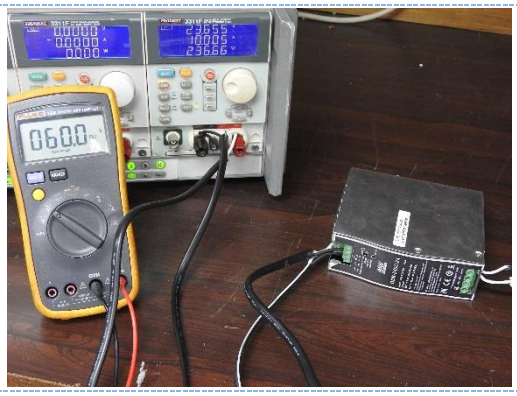
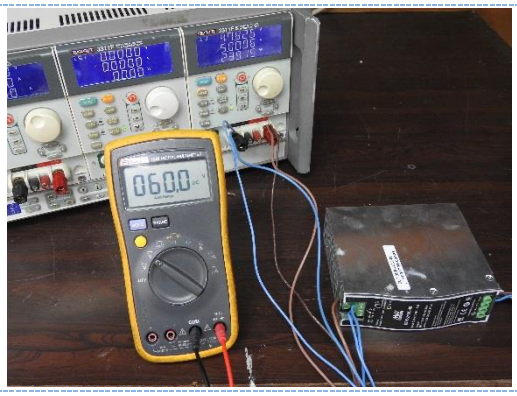
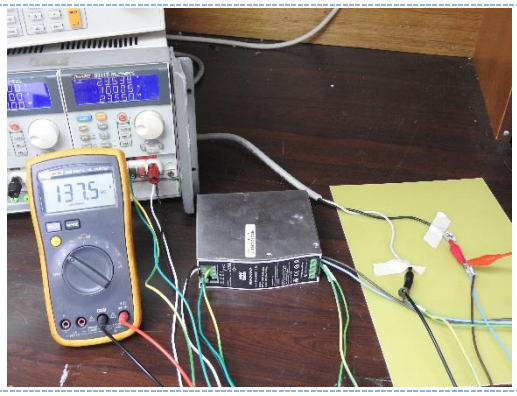
1.2.5 TEST PHOTO

	
Model : DDR-240B-24	Model : DDR-240B-48
	
Model : DDR-240C-24	Model : DDR-240C-48
	
Model : DDR-240D-24	Model : DDR-240D-48

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1.3 PERFORMANCE TET (Supply interruption)

1.3.1 TEST REQUIREMENT

Regarding interruptions on supply voltage, there are three classes of equipment:

Class	Requirements	Duration of the interruption time Tint (See Figure 9)
S1	No performance criterion is requested but the equipment shall continue to operate as specified after the voltage interruption.	NOTE As defined in 5.1.1.4, this test is not required.
S2	The equipment shall behave according performance criterion A.	10 ms
S3	The equipment shall behave according performance criterion A.	20 ms

1.3.2 TEST INSTRUMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Digital Phosphor Oscilloscope	Tektronix	DPO 2024B	2019.02.21
Thermo Recorder	T&D	TR-73U	2019.04.25

1.3.3 TEST PROCEDURE

The test procedure was in accordance with EN 50155 clause 13.4.3, 5.1.1.4

1.3.4 TEST RESULTS

Temperature	24.9℃	**Humidity**	63.3%RH
Pressure	1006.4mbar	**Test by**	Jordan Wang
Test Results		**PASS**	

Input Voltage (Un)	Durations (ms)	Times	Class	Result /Observation
DDR-240B-48				
24Vdc	10ms	10	S1	interruption
DDR-240C-48				
48Vdc	10ms	10	S1	interruption
DDR-240D-48				
96Vdc	10ms	10	S1	interruption

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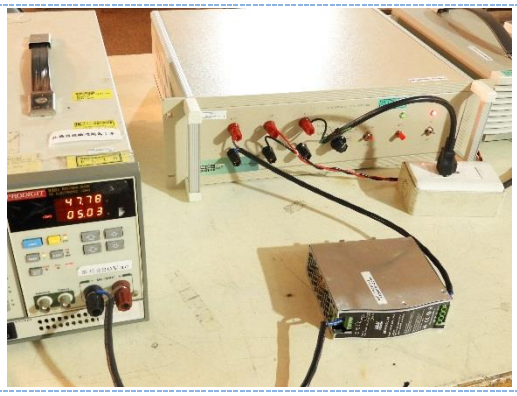
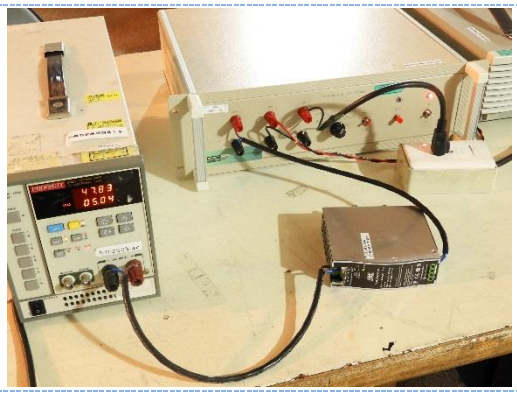
1.3.5 TEST PHOTO

Model : DDR-240B-48



Model : DDR-240C-48



Model : DDR-240D-48

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1.4 PERFORMANCE TEST (Supply change over)

1.4.1 TEST REQUIRMENT

The equipment shall operate satisfactorily under the conditions stated in Subclauses 5.1.1, 5.1.1.2, 5.1.1.6 and 5.1.3.

— Class C1: at 0,6 Un during 100 ms (without interruptions). Performance criterion A;

— Class C2: during a supply break of 30 ms starting at Un Performance criterion B.

The supply break is an open circuit and not a short circuit (“high impedance” condition).

Unless otherwise specified, the requirements of class C1 apply.

1.4.2 TEST INSTRUMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Digital Phosphor Oscilloscope	Tektronix	DPO 2024B	2019.02.21
Thermo Recorder	T&D	TR-73U	2019.04.25

1.4.3 TEST PROCEDURE

The test procedure was in accordance with EN 50155 clause 13.4.3, 5.1.3

1.4.4 TEST RESULTS

Temperature	24.9℃	**Humidity**	63.3%RH
Pressure	1006.4mbar	**Test by**	Xindian Lab. Kevin Wang
Test Results		**PASS**	

Input Voltage(Un)	Test Voltage		Class	Durations	Result / Observation
DDR-240B-48					
24Vdc	0.6Un	14.4Vdc	C1	100ms	No interruption
24Vdc	0	--	C2	30ms	No apply
DDR-240C-48					
48Vdc	0.6Un	28.8Vdc	C1	100ms	No interruption
48Vdc	0	--	C2	30ms	No apply
DDR-240D-48					
96Vdc	0.6Un	57.6Vdc	C1	100ms	No interruption
96Vdc	0	--	C2	30ms	No apply

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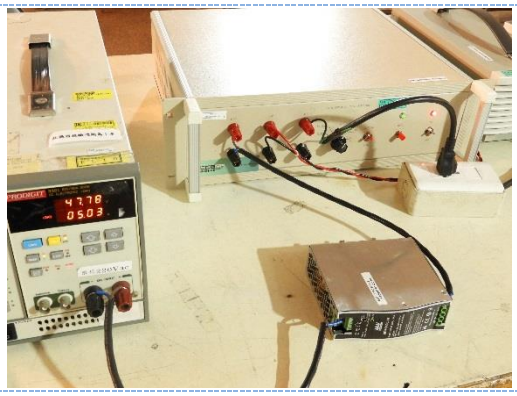
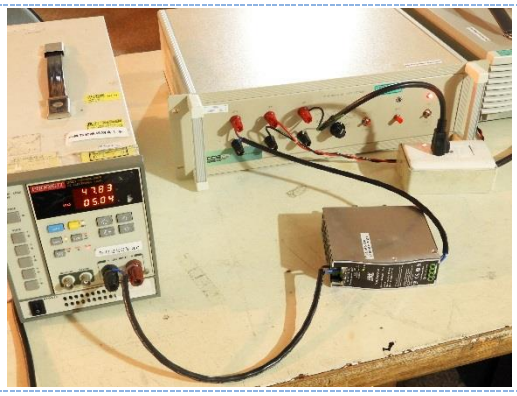
1.4.5 TEST PHOTO

	
Model : DDR-240B-48	Model : DDR-240C-48
	
Model : DDR-240D-48	

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1.5 INSULATION TEST

1.5.1 TEST REQUIRMENT

a) Insulation measurement test:

The insulation resistance measurement test shall be carried out at 500 V DC and the values shall be recorded for all the equipotential areas defined for the insulation test. During the test, the equipment shall not be powered on.

Test acceptance requirements:

The minimum value of the insulation resistance after the withstand test shall be higher than 20 MΩ. The equipment shall work as intended and within its specified limits after the insulation test.

b) Voltage withstand test:

Nominal battery voltage and/or I/O voltage	Test voltage
< 72Vdc or 50Vac rms	500Vac or 750Vdc
72Vdc ≤ Vdc < 125Vdc or from 50 to 90Vac rms	1000Vac or 1500Vdc
125Vdc ≤ Vdc < 315Vdc or from 90 to 225Vac rms	1500Vac or 2200Vdc

Test acceptance requirements:

Neither disruptive discharge nor flashover shall occur. After the withstand test, the equipment shall work as intended and within its specified limits.

1.5.2 TEST INSTRUMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Electrical Safety Compliance Analyzer	EXTECH	7451	2018.11.06
Thermo Recorder	T&D	TR-73U	2019.04.25

1.5.3 TEST PROCEDURE

The test procedure was in accordance with EN 50155 clause 13.4.9

1.5.4 TEST RESULTS

Temperature	23.2℃	Humidity	56.1%RH
Pressure	1001.1mbar	Test by	Jordan Wang
Test Results		PASS	

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1. Insulation measurement test (before voltage withstand test):

Insulation applied between / Test item	Test Voltage (Vdc)	Test Time (sec)	Resistance (MΩ)
DDR-240B-48			
Power input – Metal enclosure	500Vdc	60	3207
Power input – I/O port	500Vdc	60	4566
DDR-240C-48			
Power input – Metal enclosure	500Vdc	60	4206
Power input – I/O port	500Vdc	60	6193
DDR-240D-48			
Power input – Metal enclosure	500Vdc	60	6414
Power input – I/O port	500Vdc	60	4605

2. Voltage withstand test:

Test voltage applied between / Test item	Test voltage (Vdc)	Test time (sec)	Test current (μA)	Breakdown Yes / No
DDR-240B-48				
Power input – Metal enclosure	750	60	0.2	No
Power input – I/O port	750	60	0.1	No
DDR-240C-48				
Power input – Metal enclosure	750	60	0.1	No
Power input – I/O port	750	60	0	No
DDR-240D-48				
Power input – Metal enclosure	1500	60	0.5	No
Power input – I/O port	1500	60	0.5	No

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3. Insulation measurement test (after voltage withstand test):

Insulation applied between / Test item	Test Voltage (Vdc)	Test Time (sec)	Resistance (MΩ)
DDR-240B-48			
Power input – Metal enclosure	500Vdc	60	3640
Power input – I/O port	500Vdc	60	4685
DDR-240C-48			
Power input – Metal enclosure	500Vdc	60	5986
Power input – I/O port	500Vdc	60	7089
DDR-240D-48			
Power input – Metal enclosure	500Vdc	60	7923
Power input – I/O port	500Vdc	60	5282

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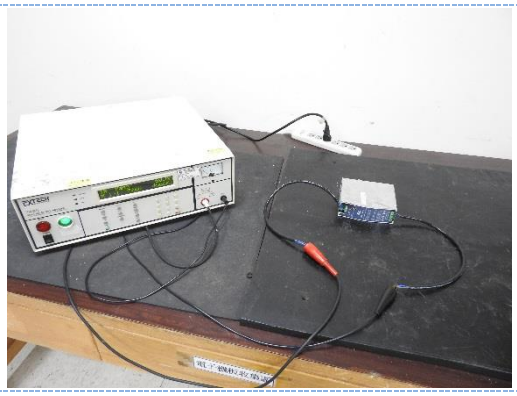
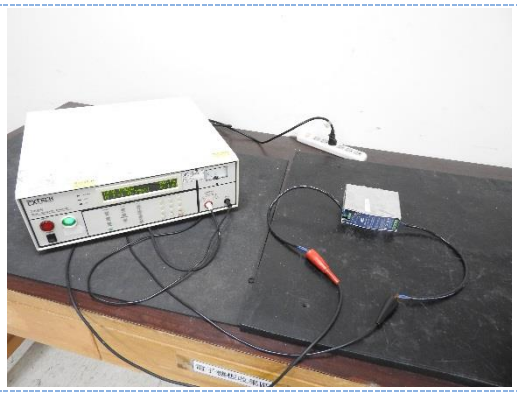
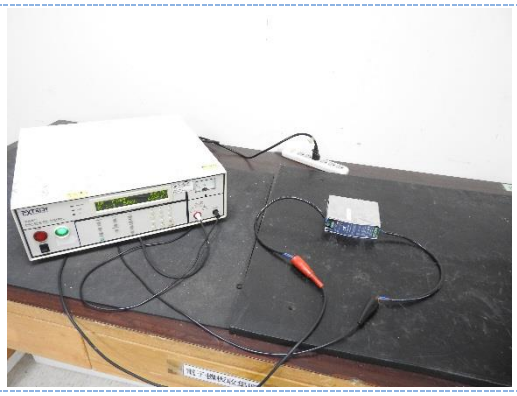
1.5.5 TEST PHOTO

	
Model : DDR-240B-48 Insulation measurement test (before voltage withstand test)	Model : DDR-240C-48 Insulation measurement test (before voltage withstand test)
	
Model : DDR-240B-48 Voltage withstand test	Model : DDR-240C-48 Voltage withstand test
	
Model : DDR-240B-48 Insulation measurement test (after voltage withstand test)	Model : DDR-240C-48 Insulation measurement test (after voltage withstand test)

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Model : DDR-240D-48 Insulation measurement test (before voltage withstand test)	
Model : DDR-240D-48 Voltage withstand test	
Model : DDR-240D-48 Insulation measurement test (after voltage withstand test)	

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2 ENVIRONMENTAL TEST

2.1 COOLING TEST

2.1.1 TEST REQUIREMENT

Equipment shall be tested according to its operating temperature class; low operating temperature (TTEST) shall be taken from Table 1 of this standard. Equipment is placed, without any voltage applied, in a test chamber.

The equipment shall be first conditioned by leaving it, after thermal stabilization of the chamber, for a sufficient period of time in which to achieve thermal stabilization. In any case, the stabilization time period shall not be less than 2 h, see Figure 12.

Test acceptance requirements:

During and after the test, the equipment shall work as intended and within its specified limits (performance criterion A).

2.1.2 TEST INSTRUMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Temperature & Humidity Chamber	CTF	LY-4S-TH	2019.05.02
Thermo Recorder	T&D	TR-73U	2019.04.25

2.1.3 TEST PROCEDURE

The test procedure was in accordance with EN 60068-2-1, test Ad

2.1.4 TEST RESULTS

Temperature	27.6℃	**Humidity**	50.3%RH
Pressure	1005.1mbar	**Test by**	Jordan Wang
Test Results		**PASS**	

Test Temperature	Durations	Performance check at low temperature	Performance check at room temperature
-40℃	2hrs	Normal operation	Normal operation

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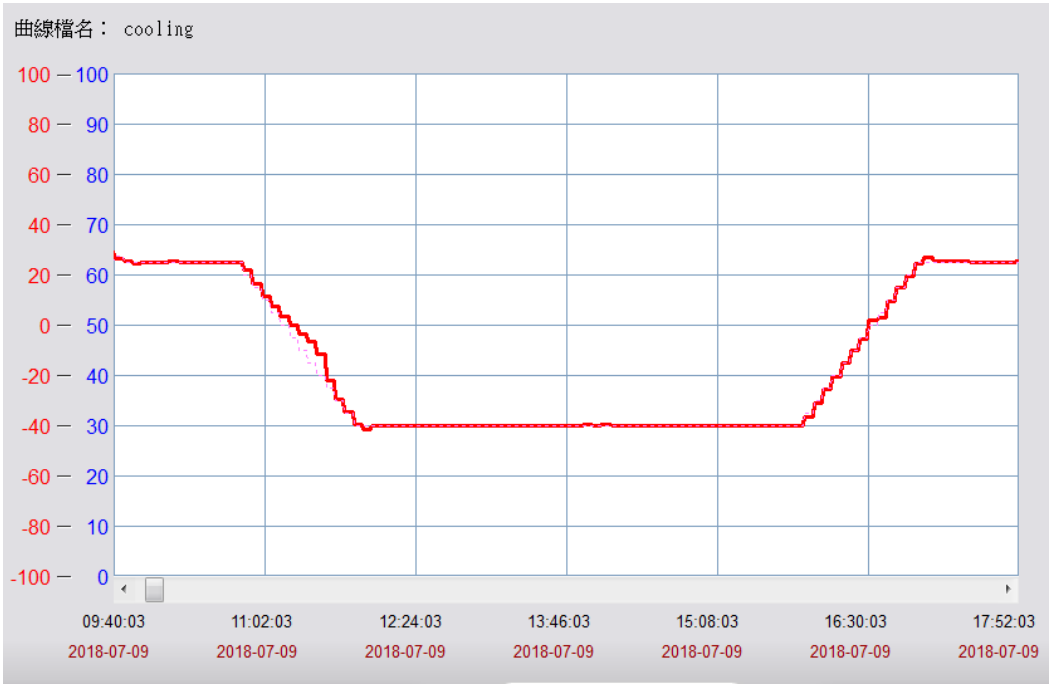
2.1.5 TEST PHOTO



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2.2 DRY HEAT TEST

2.2.1 TEST REQUIREMENT

The temperature value for this test is dependent of the temperature class and the switch-on extended operating temperature class of equipment under test (see Table 1 and Table 2 for details).

Equipment shall be tested according to its operating temperature class; high operating temperature shall be taken from Table 1 and Table 2.

2.2.2 TEST INSTRUMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Temperature & Humidity Chamber	CTF	LY-4S-TH	2019.05.02
Thermo Recorder	T&D	TR-73U	2019.04.25

2.2.3 TEST PROCEDURE

The test procedure was in accordance with EN 60068-2-2, test Be

2.2.4 TEST RESULTS

Temperature	27.8℃	**Humidity**	56.6%RH
Pressure	1002.5mbar	**Test by**	Jordan Wang
Test Results		**PASS**	

Test Temperature	Test Temperature Durations	Extended temperature	Extended temperature Durations	Performance check at high temperature	Performance check at room temperature
70℃	6hrs	85℃	10mins	Normal operation	Normal operation

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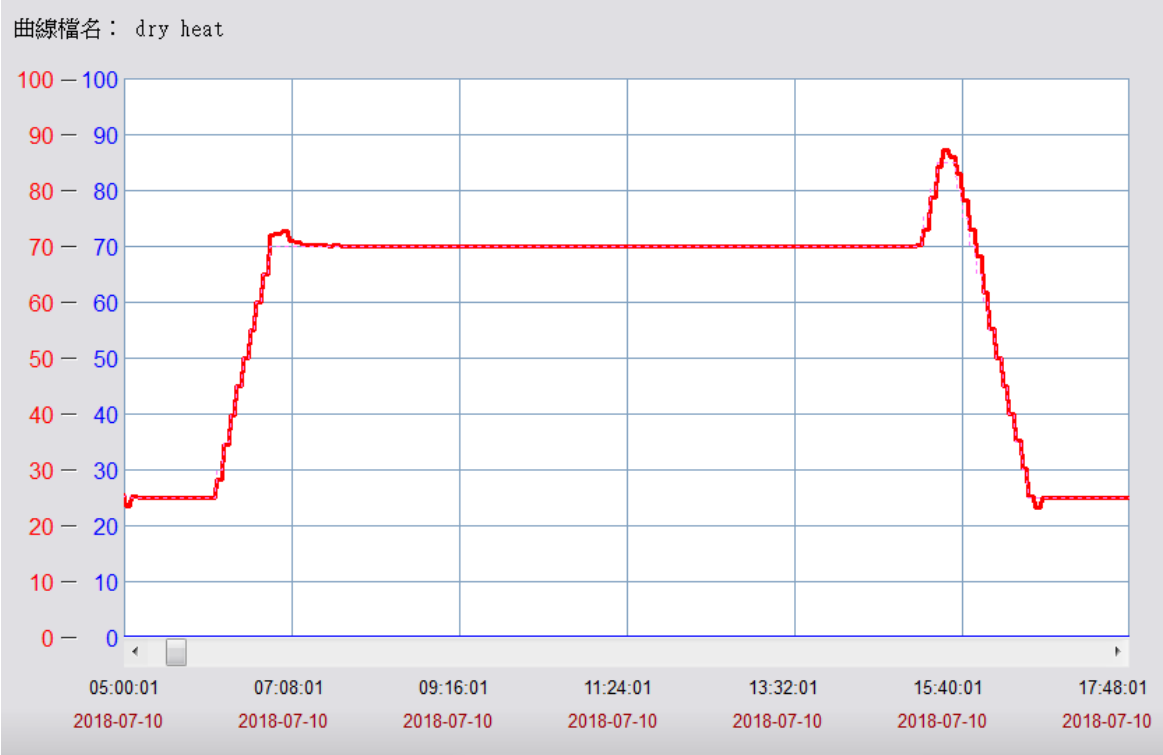
2.2.5 TEST PHOTO



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2.3 DAMP HEAT TEST

2.3.1 TEST REQUIREMENT

The equipment under test shall not be powered except during the operational check.

Temperatures: + 55 ˚C and + 25 ˚C

Number of cycles: 2 (breathing effect)

Time: (2 × 24) h

Test acceptance requirements:

The results of all insulation and performance test (results after the first and second cycles) shall be within the specified tolerances and operation performance respectively. Before and after the test (initial and final voltage withstand and insulation), the equipment shall work as intended and within its specified limits (performance criterion A).

2.3.2 TEST INSTRUMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Temperature & Humidity Chamber	CTF	LY-4S-TH	2019.05.02
Thermo Recorder	T&D	TR-73U	2019.04.25

2.3.3 TEST PROCEDURE

The test procedure was in accordance with EN 60068-2-30, test Db

2.3.4 TEST RESULTS

Temperature	28.3℃	Humidity	61.2%RH
Pressure	1004.4mbar	Test by	Jordan Wang
Test Results		PASS	

Performance check at secondary cycle	Performance check at room temperature	Insulation test
Meets performance A	Meets performance A	See clause 1.5

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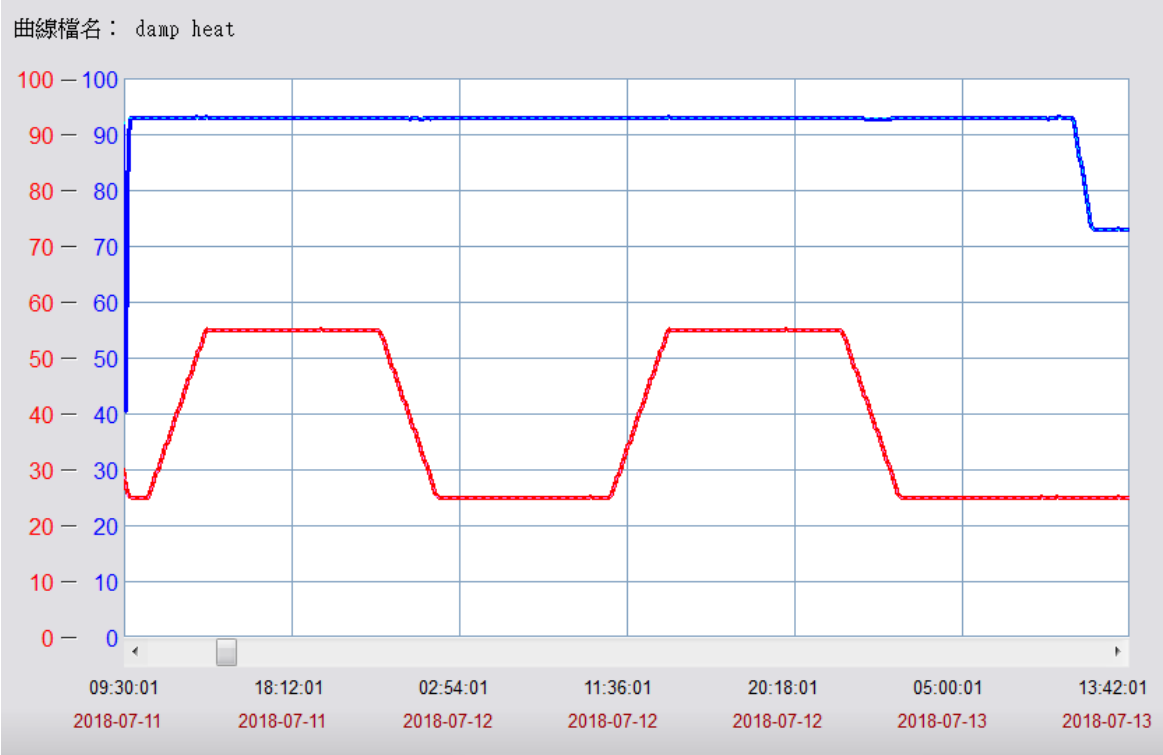
2.3.5 TEST PHOTO



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2.4 SALT MIST TEST

2.4.1 TEST REQUIREMENT

Equipment is placed, without any voltage applied, in a test chamber.

The equipment should be tested in the manner in which they are expected to be used, i.e. protective covers should be in position and the equipment arranged, as nearly as possible, in the position it will occupy in actual use.

The test chamber shall be kept closed and spraying of the salt solution shall continue without interruption during the whole conditioning period of 48 h. After recovery, operational check is carried out.

Test acceptance requirements:

— visual inspection;

— an operational check shall not show any failure or damage. The equipment shall work as intended and within its specified limit.

2.4.2 TEST INSTRUMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Salt Spray Test Chamber	T-MACHINE	TMJ-9701	2018.09.30
Thermo Recorder	T&D	TR-73U	2019.04.25

2.4.3 TEST PROCEDURE

The test procedure was in accordance with EN 60068-2-11, test Ka.

2.4.4 TEST RESULTS

Temperature	28.3℃	**Humidity**	61.2%RH
Pressure	1004.4mbar	**Test by**	Jordan Wang
Test Results		**PASS**	

Test Temperature	Test Time	Observation	Performance check
35℃	96hrs	No damage	Normal operation

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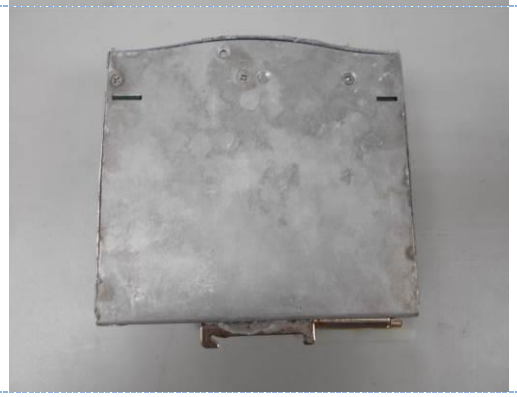
2.4.5 TEST PHOTO



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2.5 SHOCK TEST

2.5.1 TEST REQUIREMENT

Shock Type	Accelerate	Duration	Axial	Test Times
Half Sine Wave	50 m/s2	30 ms	+/- longitudinal	Each axis 3 shocks
Half Sine Wave	30 m/s2	30 ms	+/- transverse	Each axis 3 shocks
Half Sine Wave	30 m/s2	30 ms	+/- vertical	Each axis 3 shocks

Test acceptance requirements:

- No damage shall occur during the test
- during the test, the equipment is monitored and shall work as intended within its specified limits. (performance criterion A).

2.5.2 TEST INSTRUMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Vibration Generator	Vibration Source	VS-600V-51	2018.10.18
Thermo Recorder	T&D	TR-73U	2019.04.25

2.5.3 TEST PROCEDURE

The test procedure was in accordance with EN 61373:2010

2.5.4 TEST RESULTS

Temperature	25.5℃	Humidity	61.0%RH
Pressure	1011.2mbar	Test by	Jordan Wang
Test Results		PASS	

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2.5.5 TEST PHOTO

+X Axis Test Screen

Shock Type:	Half Sine	Block Size:	2048
Mag:	50.00 m/s2	Frame Time:	1.3653 s
Pulse Duration:	30 ms	dT:	0.000666667 s
Current level:	0 dB	Current Pulses:	3
Demand peak:	50.000 m/s2	Output pulses:	10
Control peak:	54.913 m/s2	Remain pulses:	0
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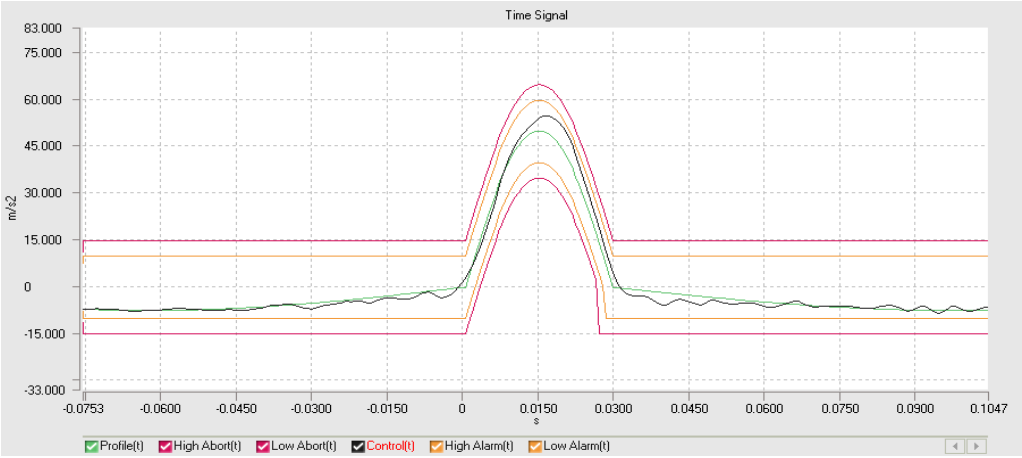

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-X Axis Test Screen

Shock Type:	Half Sine	Block Size:	2048
Mag:	50.00 m/s2	Frame Time:	1.3653 s
Pulse Duration:	30 ms	dT:	0.000666667 s
Current level:	0 dB	Current Pulses:	3
Demand peak:	50.000 m/s2	Output pulses:	10
Control peak:	50.726 m/s2	Remain pulses:	0
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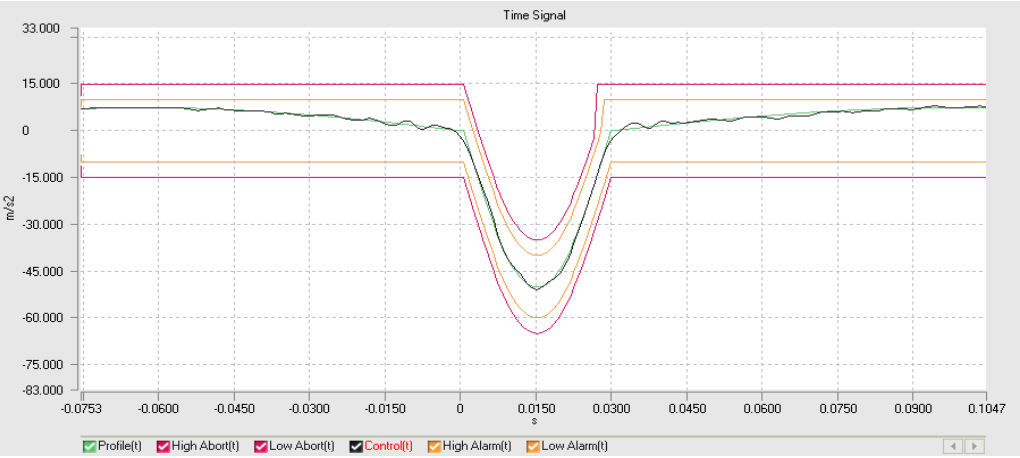

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+Y Axis Test Screen

Shock Type:	Half Sine	Block Size:	2048
Mag:	30.00 m/s2	Frame Time:	1.3653 s
Pulse Duration:	30 ms	dT:	0.000666667 s
Current level:	0 dB	Current Pulses:	3
Demand peak:	30.000 m/s2	Output pulses:	10
Control peak:	31.444 m/s2	Remain pulses:	0
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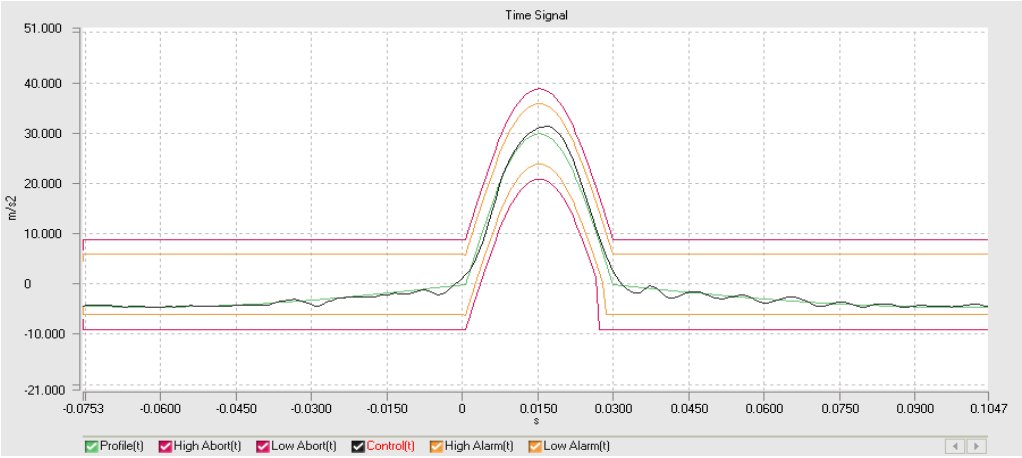

-Y Axis Test Screen

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Shock Type:	Half Sine	Block Size:	2048
Mag:	30.00 m/s2	Frame Time:	1.3653 s
Pulse Duration:	30 ms	dT:	0.000666667 s
Current level:	0 dB	Current Pulses:	3
Demand peak:	30.000 m/s2	Output pulses:	10
Control peak:	30.206 m/s2	Remain pulses:	0
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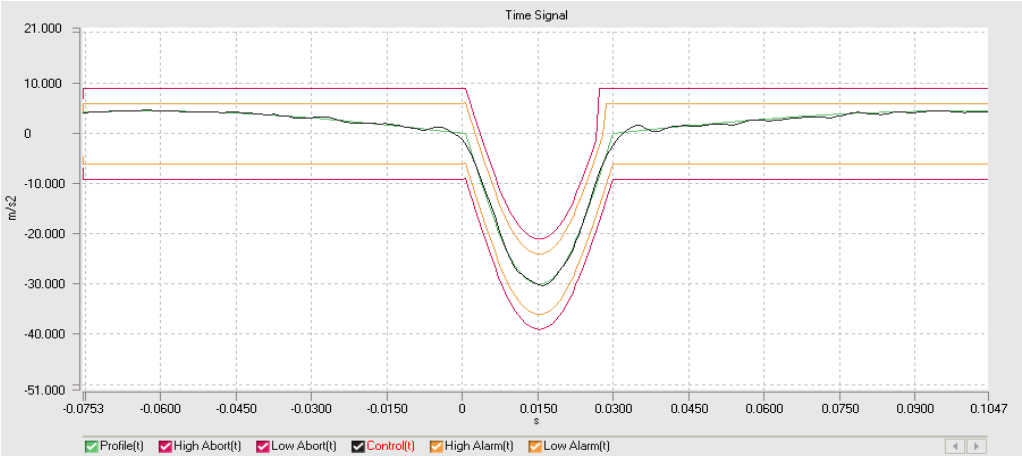

+Z Axis Test Screen

Shock Type:	Half Sine	Block Size:	2048
Mag:	30.00 m/s2	Frame Time:	1.3653 s

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Pulse Duration:	30 ms	dT:	0.000666667 s
Current level:	0 dB	Current Pulses:	3
Demand peak:	30.000 m/s2	Output pulses:	10
Control peak:	32.460 m/s2	Remain pulses:	0
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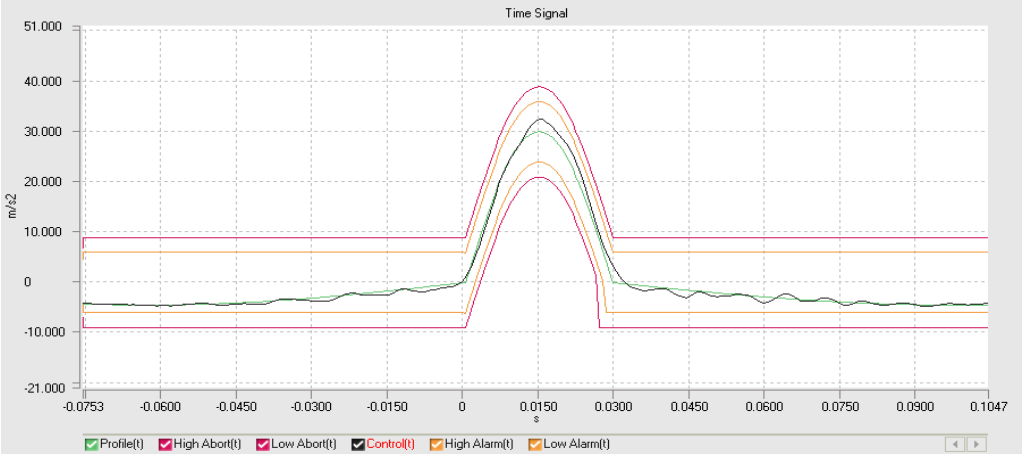

-Z Axis Test Screen

Shock Type:	Half Sine	Block Size:	2048
Mag:	30.00 m/s2	Frame Time:	1.3653 s

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Pulse Duration:	30 ms	dT:	0.000666667 s
Current level:	0 dB	Current Pulses:	3
Demand peak:	30.000 m/s2	Output pulses:	10
Control peak:	29.766 m/s2	Remain pulses:	0
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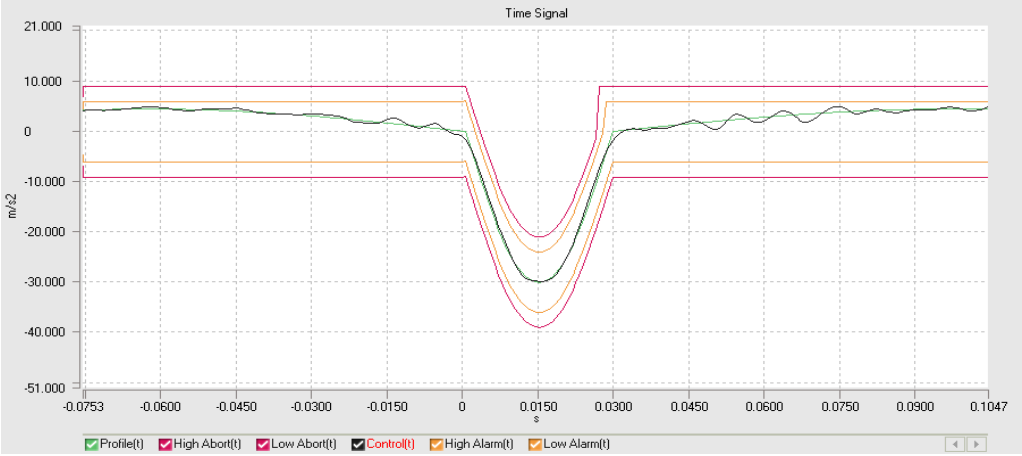

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2.6 VIBRATION TEST (Simulated long-life test)

2.6.1 TEST REQUIREMENT

Axial	Accelerate	Frequency Rang	Duration
Longitudinal	3.96 m/s2 RMS	5 ~ 150 Hz	5 hrs
Transverse	2.55 m/s2 RMS	5 ~ 150 Hz	5 hrs
Vertical	5.72 m/s2 RMS	5 ~ 150 Hz	5 hrs

Test acceptance requirements:

- No damage shall be visible after the test
- after the test, the equipment shall work as intended and within its specified limits.

2.6.2 TEST INSTRUMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Vibration Generator	Vibration Source	VS-600V-51	2018.10.18
Thermo Recorder	T&D	TR-73U	2019.04.25

2.6.3 TEST PROCEDURE

The test procedure was in accordance with EN 61373:2010

2.6.4 TEST RESULTS

Temperature	25.5℃	Humidity	61.0%RH
Pressure	1011.2mbar	Test by	Jordan Wang
Test Results		PASS	

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2.6.5 TEST PHOTO

X Axis Test Screen

Current level:	0.00dB	dF:	2.5 Hz
Demand RMS:	3.960m/s2	DOF:	120
Control RMS:	4.168m/s2	Test Elapsed:	05:00:00
Frame Time:	0.4000 (s)	Remaining Time:	00:00:00
Lines:	100		
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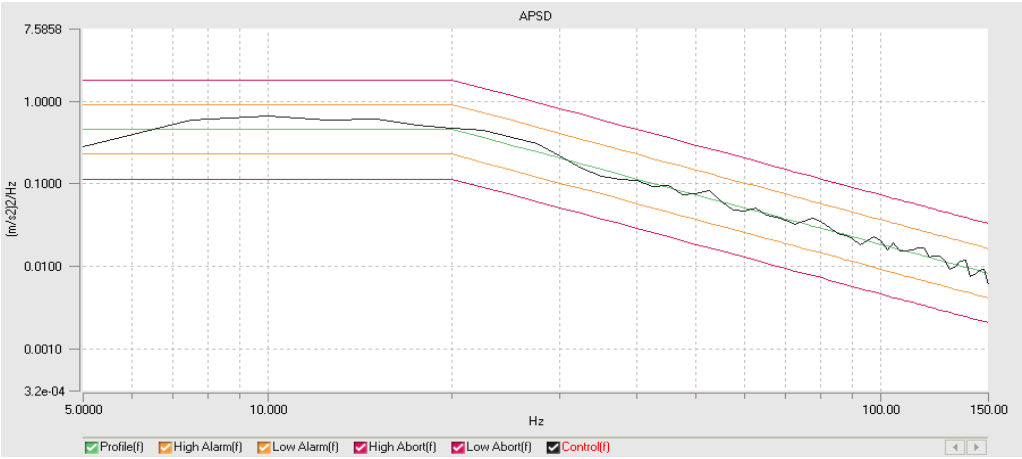

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Y Axis Test Screen

Current level:	0.00dB	dF:	2.5 Hz
Demand RMS:	2.550m/s2	DOF:	120
Control RMS:	2.577m/s2	Test Elapsed:	05:00:00
Frame Time:	0.4000 (s)	Remaining Time:	00:00:00
Lines:	100		
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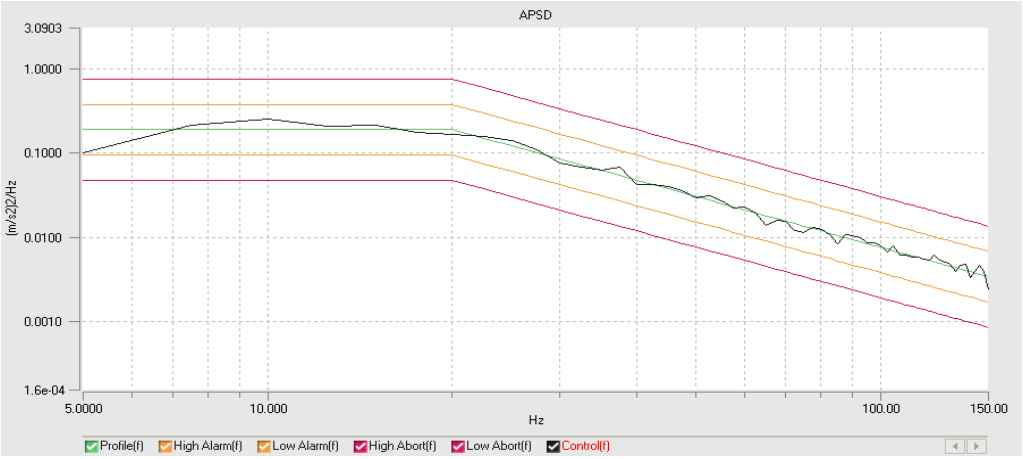

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Z Axis Test Screen

Current level:	0.00dB	dF:	2.5 Hz
Demand RMS:	5.720m/s2	DOF:	120
Control RMS:	5.772m/s2	Test Elapsed:	05:00:00
Frame Time:	0.4000 (s)	Remaining Time:	00:00:00
Lines:	100		
Data was saved as file at time:		2018-7-2 PM 09:14:02	

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2.7 VIBRATION TEST (Functional random vibration test)

2.7.1 TEST REQUIREMENT

Axial	Accelerate	Frequency Rang	Duration
Longitudinal	0.700 m/s2 RMS	5 ~ 150 Hz	10 mins
Transverse	0.450 m/s2 RMS	5 ~ 150 Hz	10 mins
Vertical	1.01 m/s2 RMS	5 ~ 150 Hz	10 mins

Test acceptance requirements:

- No damage shall occur during the test
- during the test, the equipment is monitored and shall work as intended within its specified limits (performance criterion A).

2.7.2 TEST INSTRUMENT

Name of Equipment	Manufacturer	Model	Calibration Due
Vibration Generator	Vibration Source	VS-600V-51	2018.10.18
Thermo Recorder	T&D	TR-73U	2019.04.25

2.7.3 TEST PROCEDURE

The test procedure was in accordance with EN 61373:2010

2.7.4 TEST RESULTS

Temperature	25.5℃	Humidity	61.0%RH
Pressure	1011.2mbar	Test by	Jordan Wang
Test Results		PASS	

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2.7.5 TEST PHOTO

X Axis Test Screen

Current level:	0.00dB	dF:	2.5 Hz
Demand RMS:	0.700m/s2	DOF:	120
Control RMS:	0.718m/s2	Test Elapsed:	00:10:00
Frame Time:	0.4000 (s)	Remaining Time:	00:00:00
Lines:	100		
Data was saved as file at time:		2018-7-3 AM 09:39:44	

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Y Axis Test Screen

Current level:	0.00dB	dF:	2.5 Hz
Demand RMS:	0.450m/s2	DOF:	120
Control RMS:	0.460m/s2	Test Elapsed:	00:10:00
Frame Time:	0.4000 (s)	Remaining Time:	00:00:00
Lines:	100		
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Z Axis Test Screen

Current level:	0.00dB	dF:	2.5 Hz
Demand RMS:	1.010m/s2	DOF:	120
Control RMS:	1.000m/s2	Test Elapsed:	00:10:00
Frame Time:	0.4000 (s)	Remaining Time:	00:00:00
Lines:	100		
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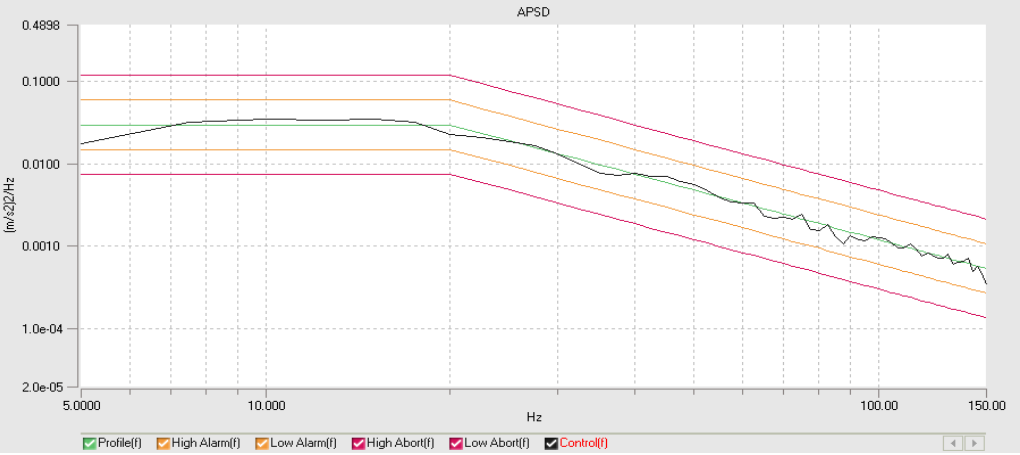

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3 TEST METHODOLOGY

3.1. DECISION OF FINAL TEST MODE

Mode1:Full load with DDR-240B-24 with DC24V
Mode2:Half load with DDR-240B-24 with DC24V
Mode3:Full load with DDR-240B-48 with DC24V
Mode4:Half load with DDR-240B-48 with DC24V
Mode5:Full load with DDR-240C-24 with DC48V
Mode6:Half load with DDR-240C-24 with DC48V
Mode7:Full load with DDR-240C-48 with DC48V
Mode8:Half load with DDR-240C-48 with DC48V
Mode9:Full load with DDR-240D-24 with DC110V
Mode10:Half load with DDR-240D-24 with DC110V
Mode11:Full load with DDR-240D-48 with DC110V
Mode12:Half load with DDR-240D-48 with DC110V
Mode13:Full load with DDR-240D-24 with DC96V
Mode14:Half load with DDR-240D-24 with DC96V
Mode15:Full load with DDR-240D-48 with DC96V
Mode16:Half load with DDR-240D-48 with DC96V

3.2. EUT SYSTEM OPERATION

1	According to the erection of erection, and measuring the resistance value and current.
2	Test and record the data.

Note: Test program is self-repeating throughout the test.

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4 SETUP OF EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF SUPPORT UNITS

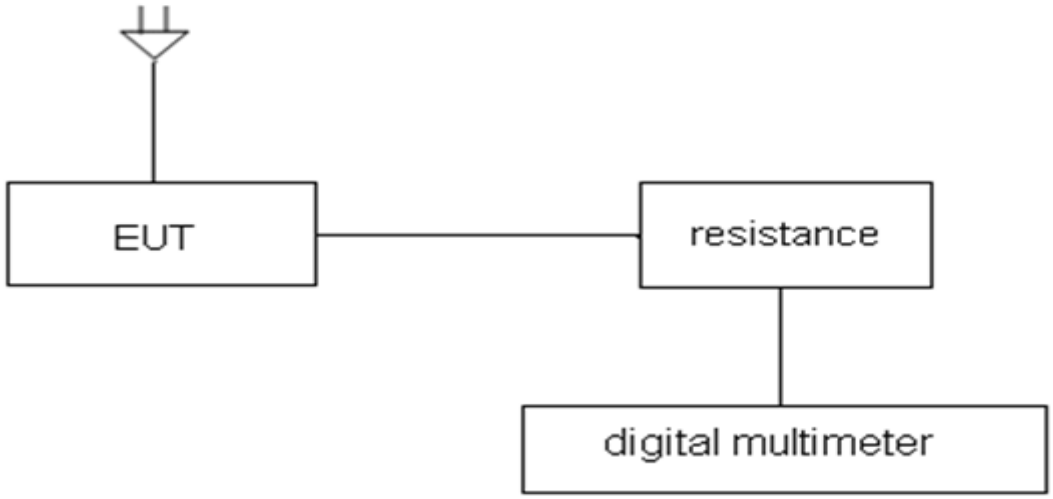
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	Resistance	N/A	N/A	N/A	N/A	N/A	N/A
2	digital multimeter	FLUKE319	24980013ws13	N/A	FLUKE	N/A	N/A

Note:

1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.2. CONFIGURATION OF SYSTEM UNDER TEST



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5 FACILITIES AND ACCREDITATIONS

5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 32. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4, CISPR 16-1-5, “Radio Interference Measuring Apparatus and Measurement Methods.”

5.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

USA	A2LA
China	CNAS

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada
Japan	VCCI
Taiwan	BSMI
USA	FCC

Copies of granted accreditation certificates are available for downloading from our web site, http:///www.ccsrf.com

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5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Uncertainty
Conducted emissions (Power Port)	0.15MHz~30MHz	+/- 2.2485 dB
Conducted emissions (Telecom Port)	0.15MHz~30MHz	+/- 2.7700dB

Measurement	Polarity	Frequency	Uncertainty
Radiated emissions (below 1GHz)	H	30MHz ~ 200MHz	+/- 4.0213dB
		200MHz ~1000MHz	+/- 4.5310dB
	V	30MHz ~ 200MHz	+/- 3.8257dB
		200MHz ~1000MHz	+/- 4.0231dB
Radiated emissions (above 1GHz)	H	1000MHz ~6000MHz	+/- 3.9713dB
	V	1000MHz ~6000MHz	+/- 4.0105dB

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

Consistent with industry standard (e.g. CISPR 32: 2012, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.

The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than U_{CISPR} which is 3.6dB and 5.2dB respectively. CCS values (called U_{Lab} in CISPR 16-4-2) is less than U_{CISPR} as shown in the table above. Therefore, MU need not be considered for compliance.

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6 EMISSION TEST

6.1. CONDUCTED EMISSION MEASUREMENT

6.1.1. LIMITS

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	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 range of 0.15 to 0.50 MHz.
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

6.1.2. TEST INSTRUMENTS

CE (Shielding Room)					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI TEST RECEIVER	R&S	ESCI	100781	02/26/2018	02/25/2019
V (V-LISN)	SCHWARZBECK	NNLK 8129	8129-143	10/29/2017	10/28/2018
TWO-LINE V-NETWORK	R&S	ENV216	101604	10/29/2017	10/28/2018
Pulse LIMITER	R&S	ESH3-Z2	100524	12/27/2017	12/26/2018
Test Software	EZ-EMC ver.3A1				

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Required.

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6.1.3. TEST PROCEDURES

Procedure of Preliminary Test

The EUT and Support equipment, if needed, was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN 55032 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 15 cm non-conductive covering to insulate the EUT from the ground plane.

All I/O cables were positioned to simulate typical actual usage as per EN 55032.

The test equipment EUT installed received AC main power, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane.

All support equipment power received from a second LISN.

The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in Item 4.1 were scanned during the preliminary test.

After the preliminary scan, we found the test mode described in Item 4.1 producing the highest emission level.

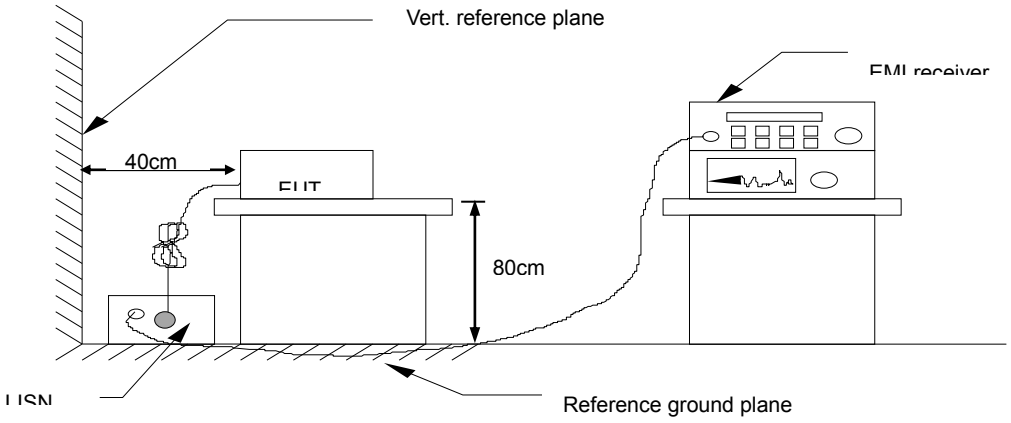
The EUT configuration and cable configuration of the above highest emission levels were recorded for reference of the final test.

Procedure of Final Test

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.



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6.1.4. TEST SETUP

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.1.5. DATA SAMPLE

Frequency	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)
x.xxxx	29.89	15.22	11.09	40.98	26.31	56.00	46.00	-15.02	-19.69

Correction factor (dB) = cable loss + Insertion loss of LISN+ Insertion loss of transient limiter (The transient limiter included 10 dB attenuation)

(QuasiPeak/ Average)Result = (QuasiPeak/ Average)reading + Correction Factor (dB)

Calculation Formula
(QuasiPeak/ Average)Margin (dB) = (QuasiPeak/ Average)Result (dBuV) –(QuasiPeak/ Average)Limit (dBuV)

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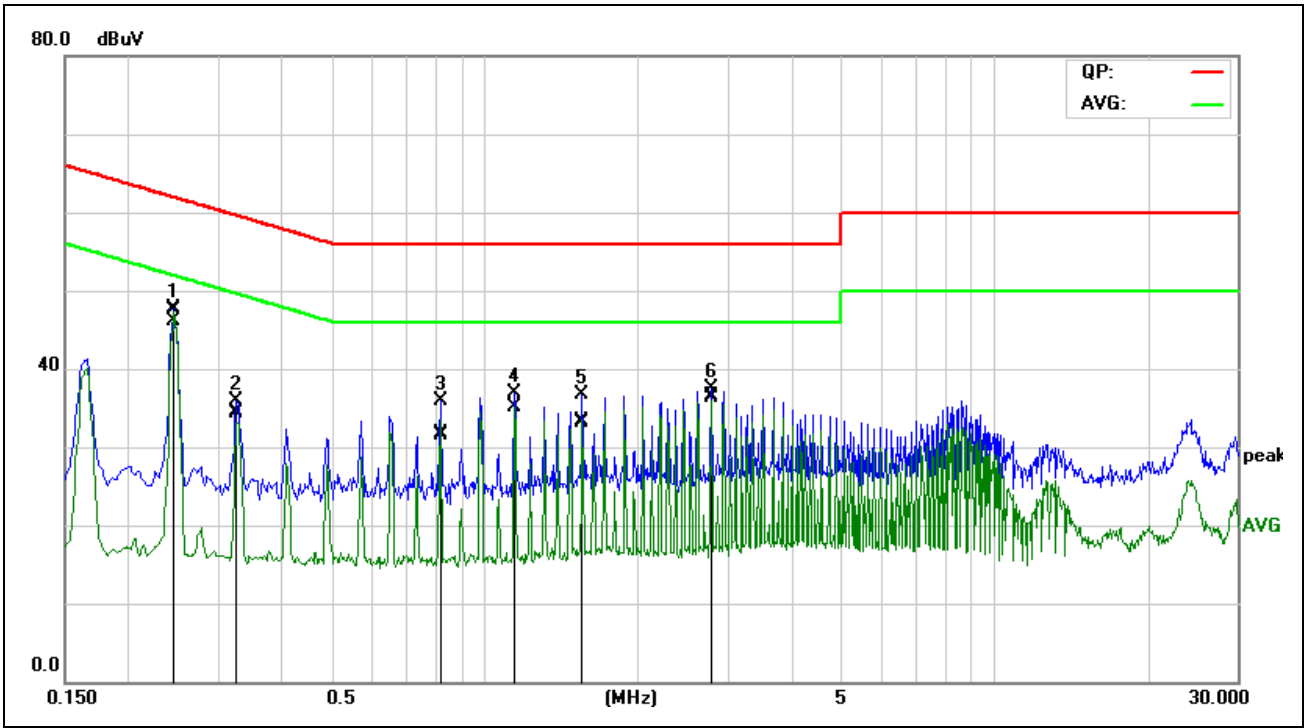
6.1.6. TEST RESULTS

Job No.:	C180611E01	Date:	2018/6/20
Company:	MEAN WELL	Time:	17:47:18
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 24V
Model:	DDR-240B-24	Description:	Mode 1



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.2453	28.02	26.72	19.46	47.48	46.18	61.91	51.91	-14.43	-5.73	Pass
2	0.3260	14.93	14.82	19.48	34.41	34.30	59.55	49.55	-25.14	-15.25	Pass
3	0.8162	12.21	12.00	19.55	31.76	31.55	56.00	46.00	-24.24	-14.45	Pass
4	1.1463	15.62	15.60	19.56	35.18	35.16	56.00	46.00	-20.82	-10.84	Pass
5	1.5534	13.73	13.45	19.58	33.31	33.03	56.00	46.00	-22.69	-12.97	Pass
6	2.7810	16.87	16.65	19.61	36.48	36.26	56.00	46.00	-19.52	-9.74	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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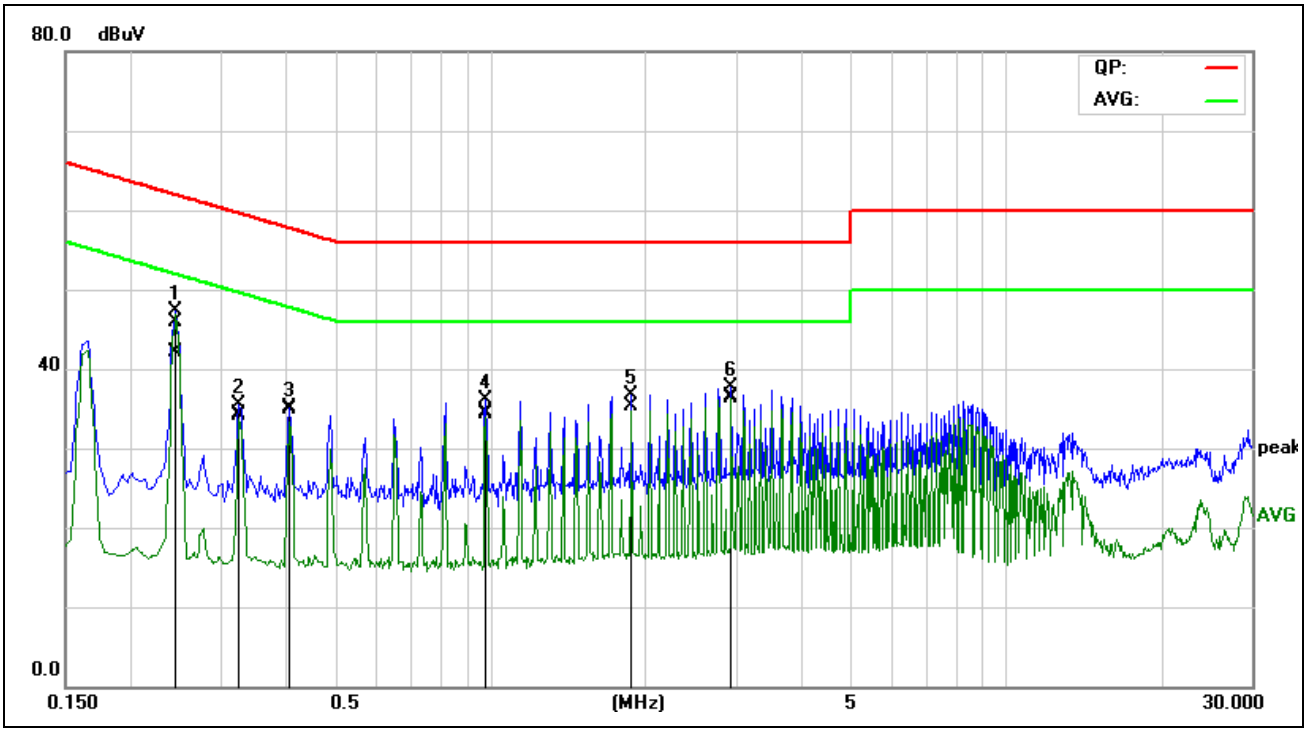
Job No.:	C180611E01	Date:	2018/6/20
Company:	MEAN WELL	Time:	17:52:36
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 24V
Model:	DDR-240B-24	Description:	Mode 1



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.2447	26.47	22.67	19.45	45.92	42.12	61.93	51.94	-16.01	-9.82	Pass
2	0.3273	14.75	14.64	19.47	34.22	34.11	59.52	49.52	-25.30	-15.41	Pass
3	0.4095	15.44	15.39	19.47	34.91	34.86	57.66	47.66	-22.75	-12.80	Pass
4	0.9811	14.89	14.79	19.54	34.43	34.33	56.00	46.00	-21.57	-11.67	Pass
5	1.8788	15.68	15.66	19.57	35.25	35.23	56.00	46.00	-20.75	-10.77	Pass
6*	2.9382	16.97	16.76	19.60	36.57	36.36	56.00	46.00	-19.43	-9.64	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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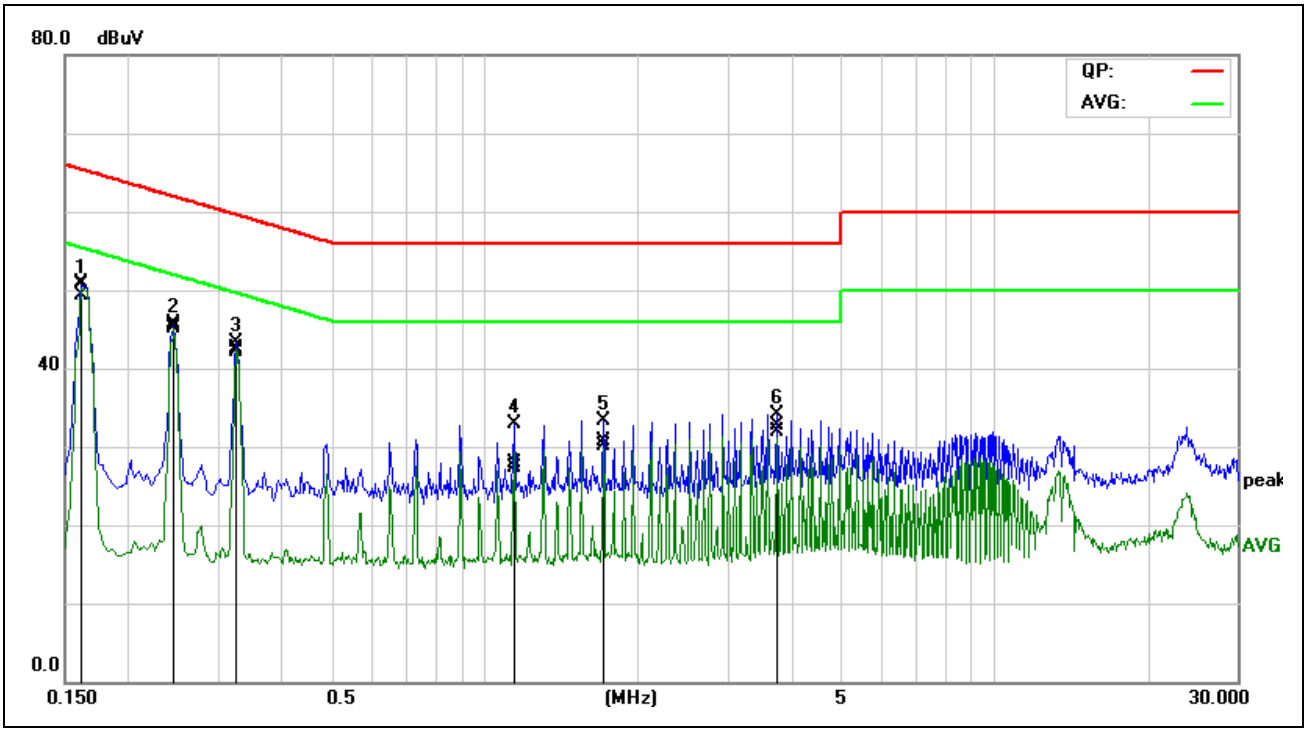
Job No.:	C180611E01	Date:	2018/6/20
Company:	MEAN WELL	Time:	18:02:23
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 24V
Model:	DDR-240B-24	Description:	Mode 2



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1628	31.40	29.82	19.43	50.83	49.25	65.31	55.32	-14.48	-6.07	Pass
2	0.2449	25.74	25.98	19.46	45.20	45.44	61.93	51.93	-16.73	-6.49	Pass
3	0.3266	22.71	22.93	19.48	42.19	42.41	59.54	49.54	-17.35	-7.13	Pass
4	1.1397	8.28	7.65	19.56	27.84	27.21	56.00	46.00	-28.16	-18.79	Pass
5	1.7124	11.03	10.51	19.58	30.61	30.09	56.00	46.00	-25.39	-15.91	Pass
6	3.7535	13.05	12.28	19.65	32.70	31.93	56.00	46.00	-23.30	-14.07	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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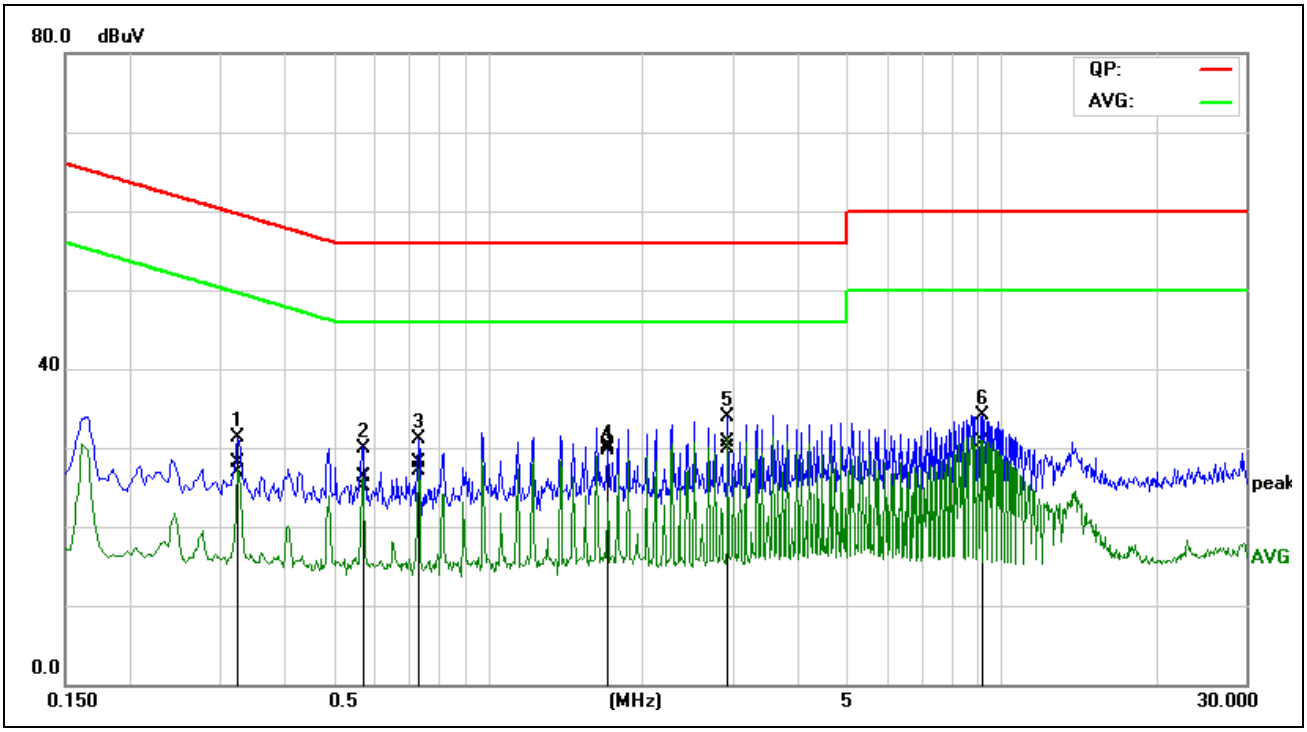
Job No.:	C180611E01	Date:	2018/6/20
Company:	MEAN WELL	Time:	17:57:34
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 24V
Model:	DDR-240B-24	Description:	Mode 2



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.3266	8.58	7.52	19.47	28.05	26.99	59.54	49.54	-31.49	-22.55	Pass
2	0.5732	6.89	5.58	19.49	26.38	25.07	56.00	46.00	-29.62	-20.93	Pass
3	0.7339	8.50	7.51	19.53	28.03	27.04	56.00	46.00	-27.97	-18.96	Pass
4	1.7134	10.84	10.25	19.56	30.40	29.81	56.00	46.00	-25.60	-16.19	Pass
5*	2.9391	11.17	10.26	19.60	30.77	29.86	56.00	46.00	-25.23	-16.14	Pass
6	9.2212	10.86	9.50	19.83	30.69	29.33	60.00	50.00	-29.31	-20.67	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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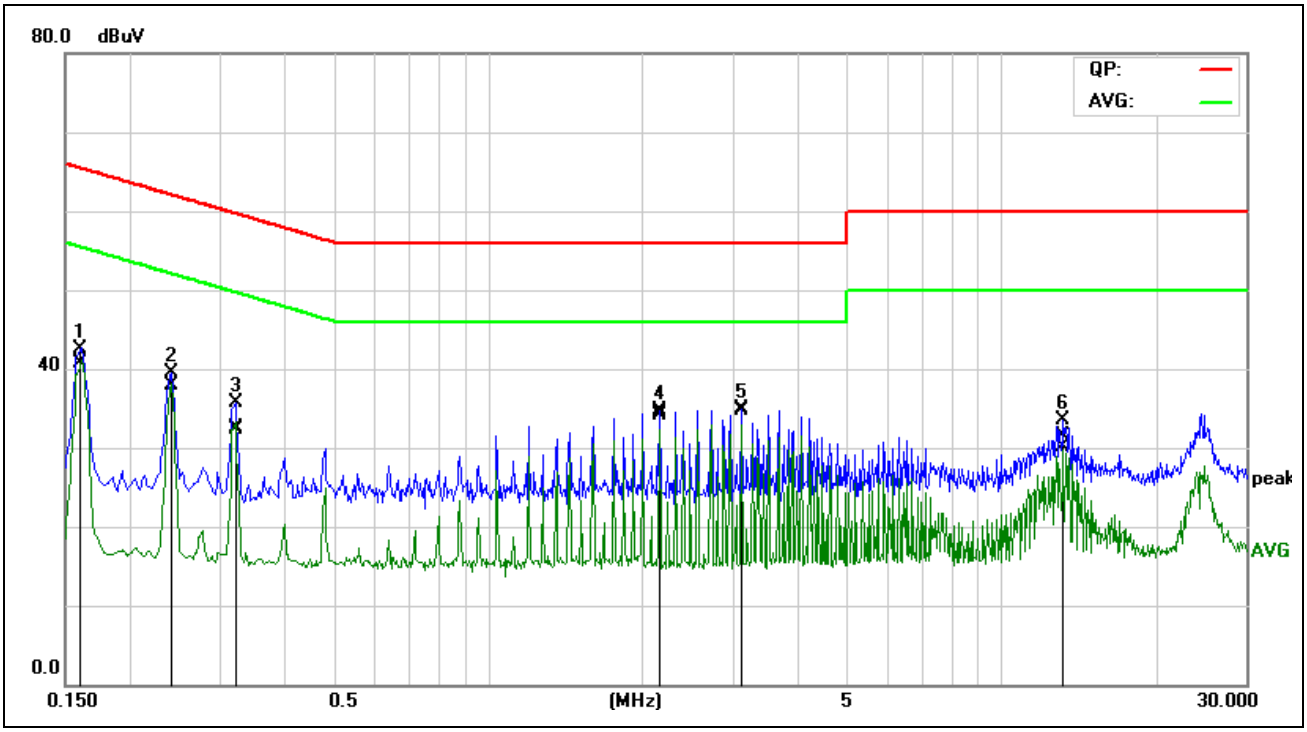
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	20:14:13
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 24V
Model:	DDR-240B-48	Description:	Mode 3



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1587	21.24	21.28	19.43	40.67	40.71	65.53	55.53	-24.86	-14.82	Pass
2	0.2404	18.45	18.50	19.46	37.91	37.96	62.08	52.08	-24.17	-14.12	Pass
3	0.3215	13.03	12.76	19.48	32.51	32.24	59.67	49.67	-27.16	-17.43	Pass
4	2.1617	14.97	14.56	19.59	34.56	34.15	56.00	46.00	-21.44	-11.85	Pass
5*	3.1212	15.38	15.06	19.62	35.00	34.68	56.00	46.00	-21.00	-11.32	Pass
6	13.2043	11.57	10.18	19.99	31.56	30.17	60.00	50.00	-28.44	-19.83	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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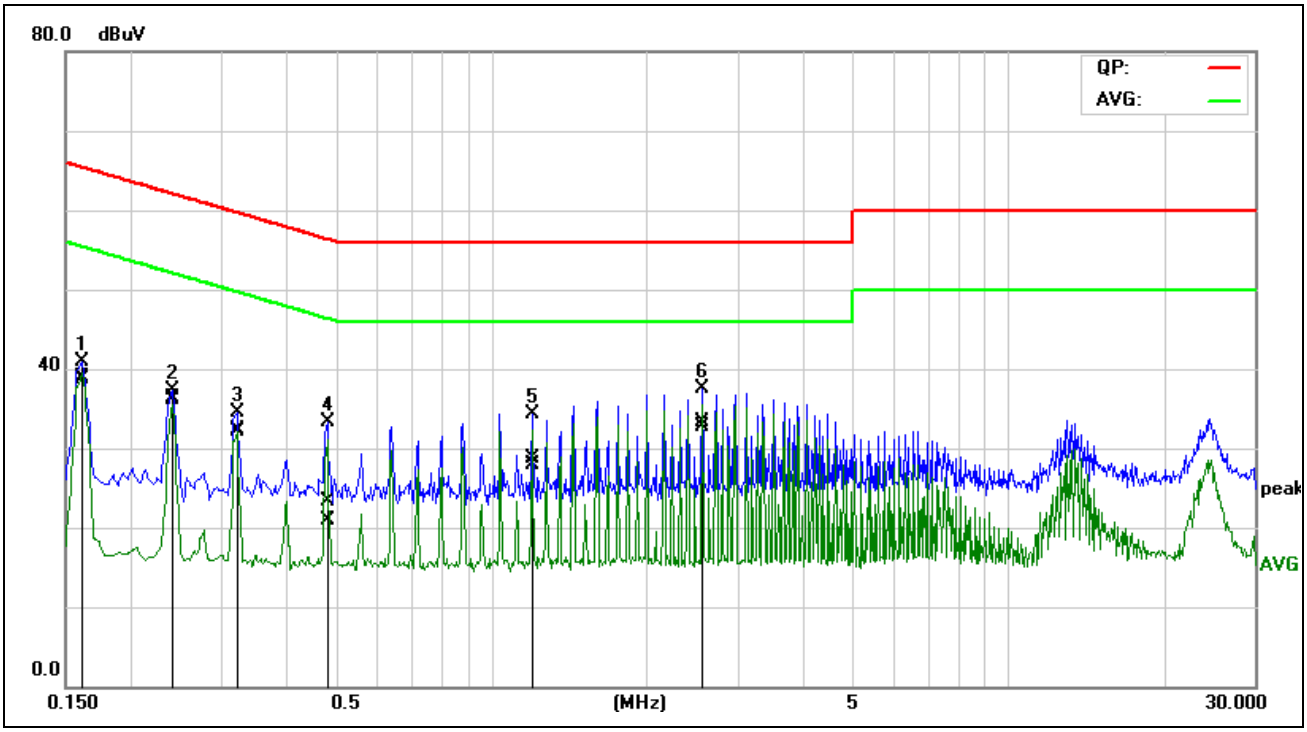
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	20:04:48
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 24V
Model:	DDR-240B-48	Description:	Mode 3



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1601	19.41	19.37	19.42	38.83	38.79	65.45	55.46	-26.62	-16.67	Pass
2	0.2397	16.78	16.70	19.45	36.23	36.15	62.10	52.11	-25.87	-15.96	Pass
3	0.3184	12.88	12.60	19.47	32.35	32.07	59.75	49.75	-27.40	-17.68	Pass
4	0.4792	3.83	1.35	19.49	23.32	20.84	56.35	46.35	-33.03	-25.51	Pass
5	1.1994	9.08	8.28	19.55	28.63	27.83	56.00	46.00	-27.37	-18.17	Pass
6*	2.5613	13.72	13.20	19.59	33.31	32.79	56.00	46.00	-22.69	-13.21	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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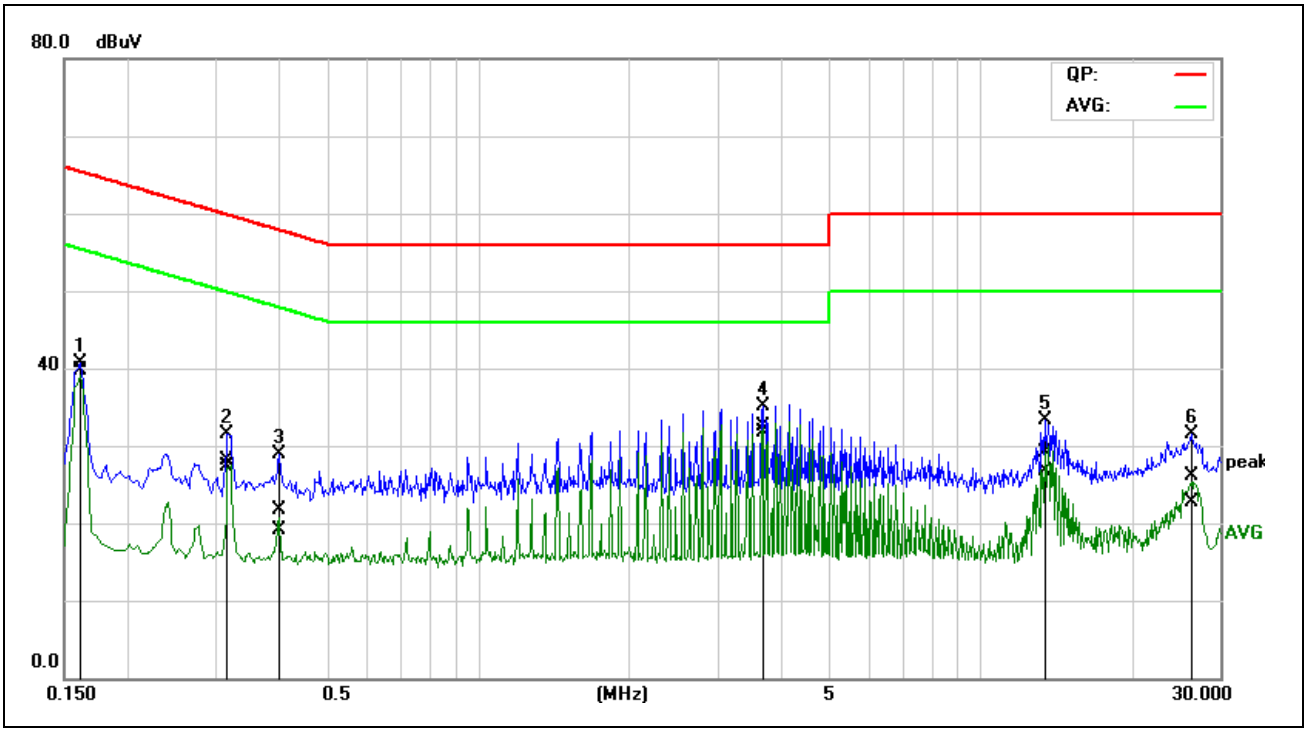
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	20:19:08
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 24V
Model:	DDR-240B-48	Description:	Mode 4



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1599	20.33	20.32	19.43	39.76	39.75	65.46	55.47	-25.70	-15.72	Pass
2	0.3180	8.67	7.76	19.48	28.15	27.24	59.76	49.76	-31.61	-22.52	Pass
3	0.4027	2.22	-0.29	19.49	21.71	19.20	57.80	47.80	-36.09	-28.60	Pass
4*	3.6785	12.77	12.14	19.65	32.42	31.79	56.00	46.00	-23.58	-14.21	Pass
5	13.4408	9.08	6.71	20.00	29.08	26.71	60.00	50.00	-30.92	-23.29	Pass
6	26.3956	5.99	2.62	20.07	26.06	22.69	60.00	50.00	-33.94	-27.31	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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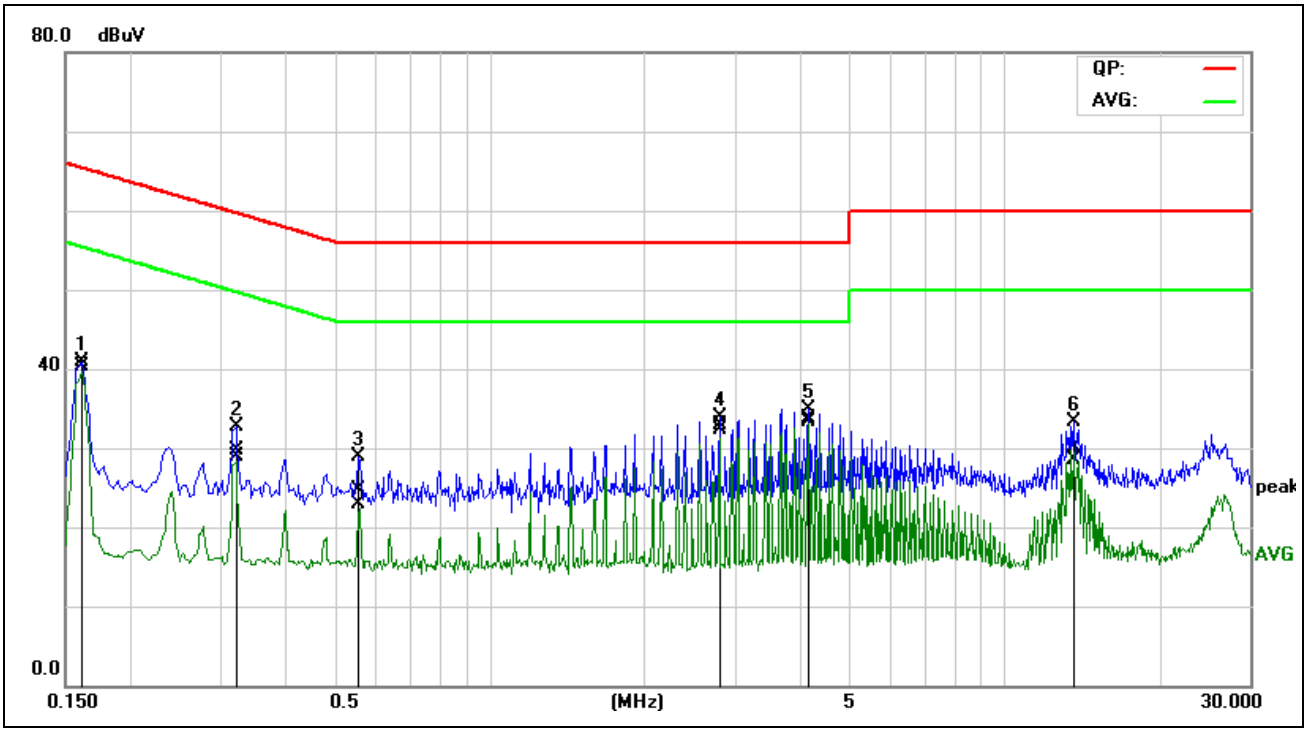
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	20:23:56
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 24V
Model:	DDR-240B-48	Description:	Mode 4



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1602	20.84	20.86	19.42	40.26	40.28	65.45	55.45	-25.19	-15.17	Pass
2	0.3209	10.18	9.48	19.47	29.65	28.95	59.68	49.68	-30.03	-20.73	Pass
3	0.5606	5.24	3.42	19.49	24.73	22.91	56.00	46.00	-31.27	-23.09	Pass
4	2.7998	13.29	12.72	19.59	32.88	32.31	56.00	46.00	-23.12	-13.69	Pass
5*	4.1607	14.12	13.66	19.65	33.77	33.31	56.00	46.00	-22.23	-12.69	Pass
6	13.6794	10.23	8.61	19.97	30.20	28.58	60.00	50.00	-29.80	-21.42	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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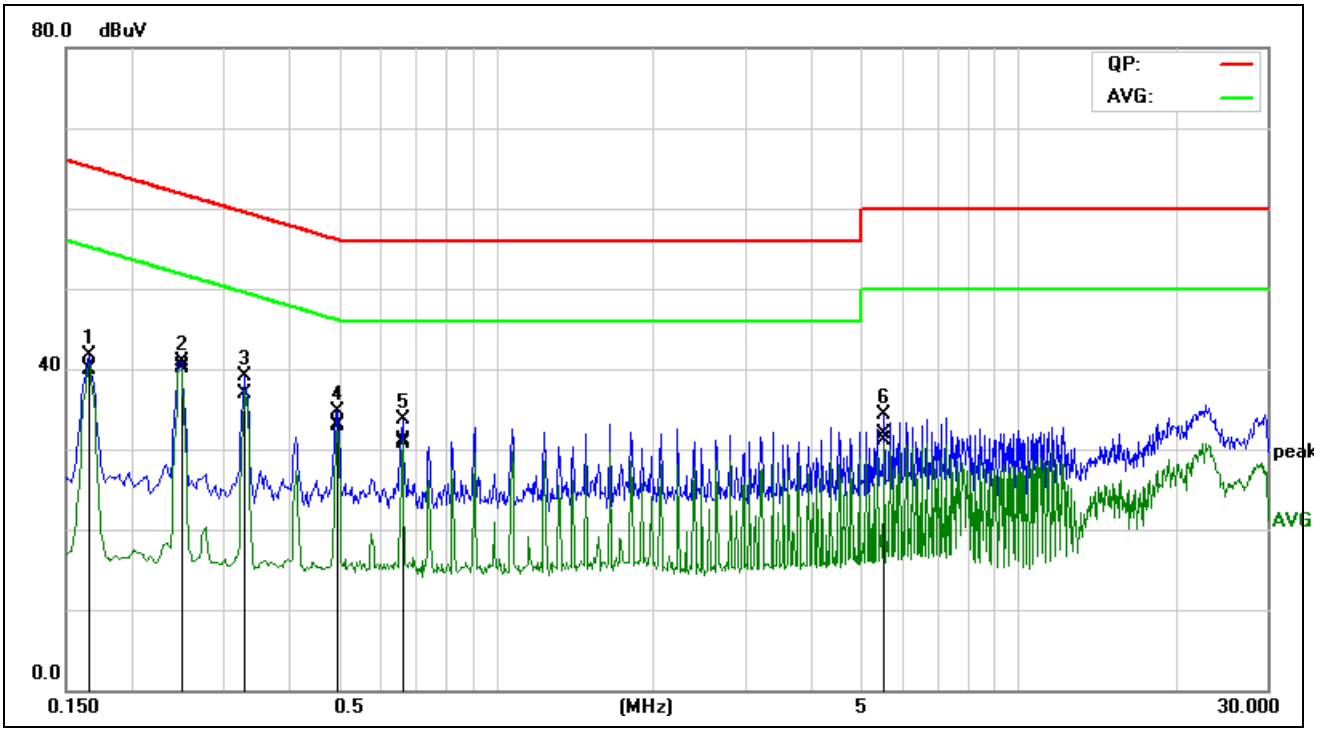
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	19:11:32
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 48V
Model:	DDR-240C-24	Description:	Mode 5



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1655	20.38	20.47	19.43	39.81	39.90	65.18	55.18	-25.37	-15.28	Pass
2*	0.2486	20.62	20.78	19.46	40.08	40.24	61.80	51.80	-21.72	-11.56	Pass
3	0.3313	17.42	17.47	19.48	36.90	36.95	59.42	49.42	-22.52	-12.47	Pass
4	0.4949	13.63	13.43	19.49	33.12	32.92	56.09	46.09	-22.97	-13.17	Pass
5	0.6594	11.65	11.18	19.52	31.17	30.70	56.00	46.00	-24.83	-15.30	Pass
6	5.5284	12.19	11.34	19.72	31.91	31.06	60.00	50.00	-28.09	-18.94	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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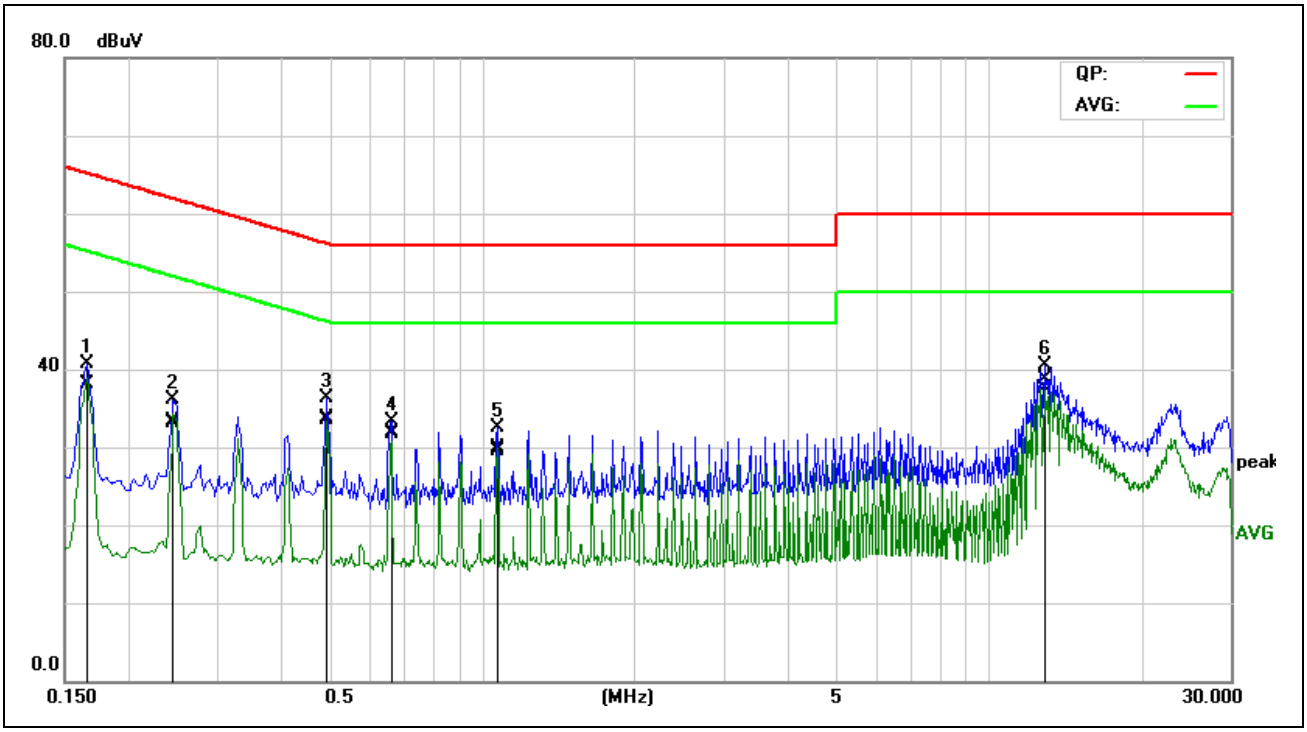
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	19:15:47
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 48V
Model:	DDR-240C-24	Description:	Mode 5



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1659	18.67	18.70	19.42	38.09	38.12	65.16	55.16	-27.07	-17.04	Pass
2	0.2452	13.83	13.59	19.45	33.28	33.04	61.91	51.92	-28.63	-18.88	Pass
3	0.4946	14.19	14.05	19.49	33.68	33.54	56.09	46.09	-22.41	-12.55	Pass
4	0.6586	12.48	12.20	19.51	31.99	31.71	56.00	46.00	-24.01	-14.29	Pass
5	1.0698	10.41	9.92	19.54	29.95	29.46	56.00	46.00	-26.05	-16.54	Pass
6*	12.8538	18.85	17.60	19.94	38.79	37.54	60.00	50.00	-21.21	-12.46	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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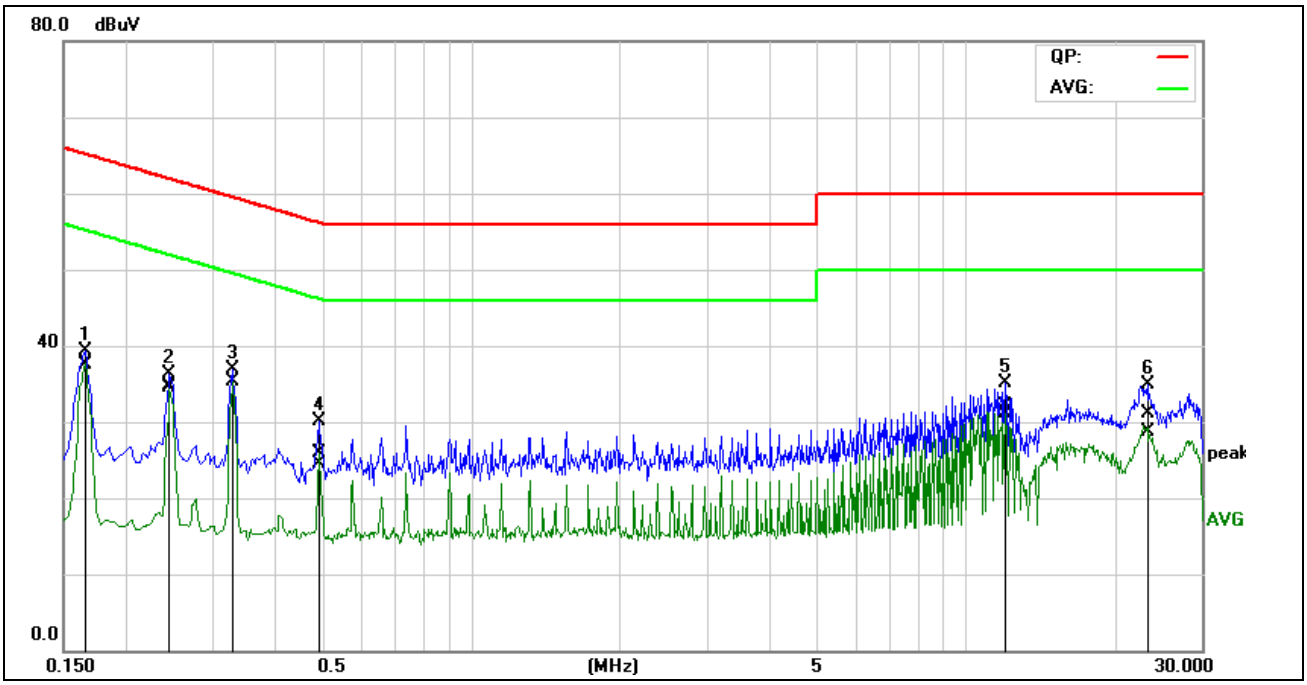
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	19:25:32
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 48V
Model:	DDR-240C-24	Description:	Mode 6



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1635	18.02	17.99	19.43	37.45	37.42	65.28	55.28	-27.83	-17.86	Pass
2	0.2475	15.17	14.97	19.46	34.63	34.43	61.84	51.84	-27.21	-17.41	Pass
3*	0.3291	15.81	15.74	19.48	35.29	35.22	59.47	49.47	-24.18	-14.25	Pass
4	0.4916	6.37	4.96	19.49	25.86	24.45	56.14	46.14	-30.28	-21.69	Pass
5	12.0156	12.22	11.09	19.95	32.17	31.04	60.00	50.00	-27.83	-18.96	Pass
6	23.3733	11.11	8.61	20.08	31.19	28.69	60.00	50.00	-28.81	-21.31	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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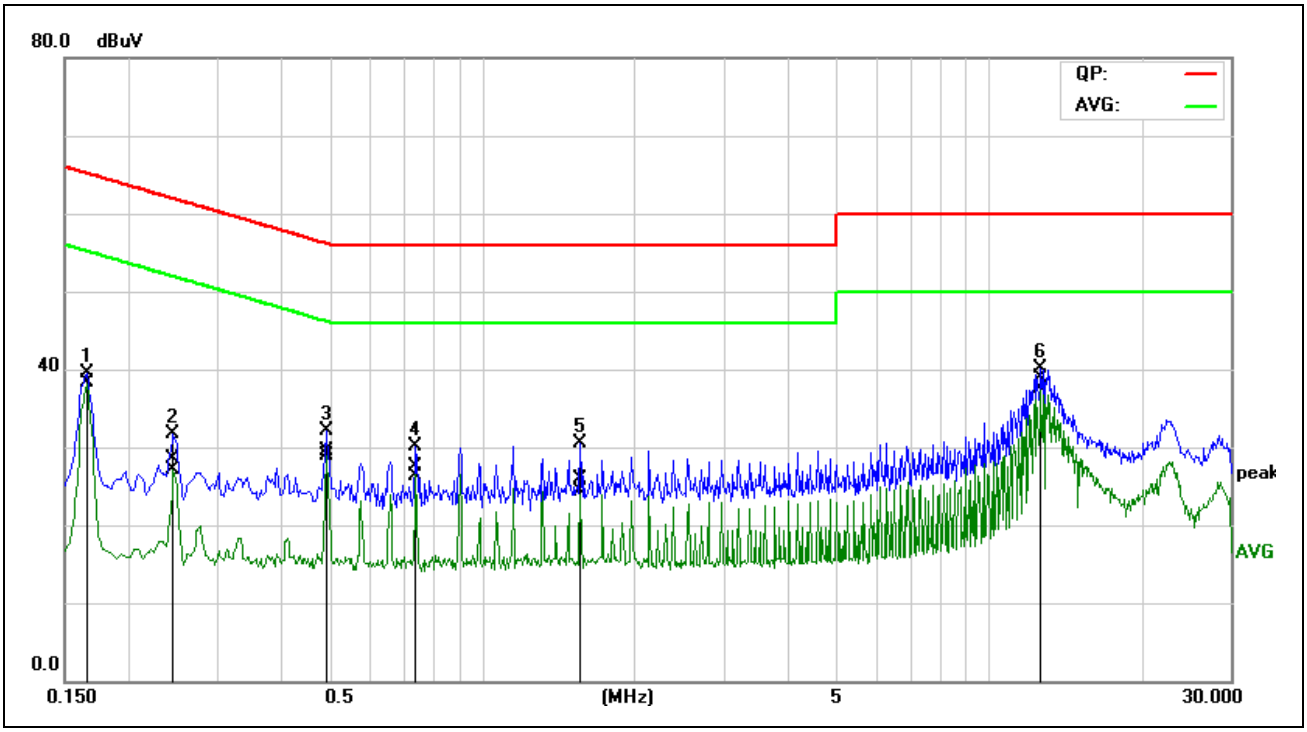
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	19:21:05
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 48V
Model:	DDR-240C-24	Description:	Mode 6



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1648	18.86	18.85	19.42	38.28	38.27	65.21	55.22	-26.93	-16.95	Pass
2	0.2473	8.96	7.73	19.45	28.41	27.18	61.84	51.85	-33.43	-24.67	Pass
3	0.4931	10.02	9.37	19.49	29.51	28.86	56.12	46.12	-26.61	-17.26	Pass
4	0.7418	7.89	6.83	19.53	27.42	26.36	56.00	46.00	-28.58	-19.64	Pass
5	1.5645	6.26	4.69	19.56	25.82	24.25	56.00	46.00	-30.18	-21.75	Pass
6*	12.6733	19.03	17.48	19.94	38.97	37.42	60.00	50.00	-21.03	-12.58	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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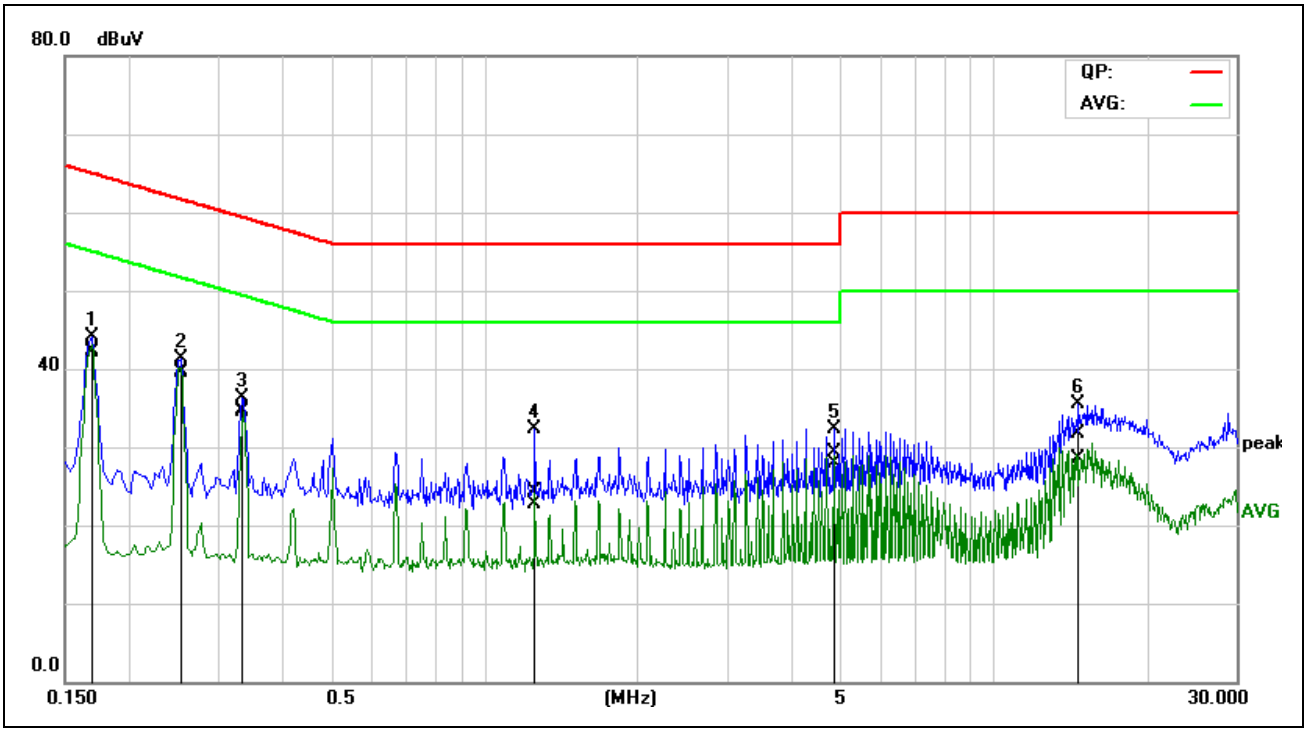
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	19:32:40
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 48V
Model:	DDR-240C-48	Description:	Mode 7



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1677	22.68	22.84	19.43	42.11	42.27	65.07	55.07	-22.96	-12.80	Pass
2*	0.2522	20.04	20.15	19.47	39.51	39.62	61.68	51.68	-22.17	-12.06	Pass
3	0.3361	15.15	15.05	19.48	34.63	34.53	59.30	49.30	-24.67	-14.77	Pass
4	1.2625	4.65	3.23	19.57	24.22	22.80	56.00	46.00	-31.78	-23.20	Pass
5	4.8670	9.55	8.26	19.69	29.24	27.95	56.00	46.00	-26.76	-18.05	Pass
6	14.6883	11.63	8.46	20.05	31.68	28.51	60.00	50.00	-28.32	-21.49	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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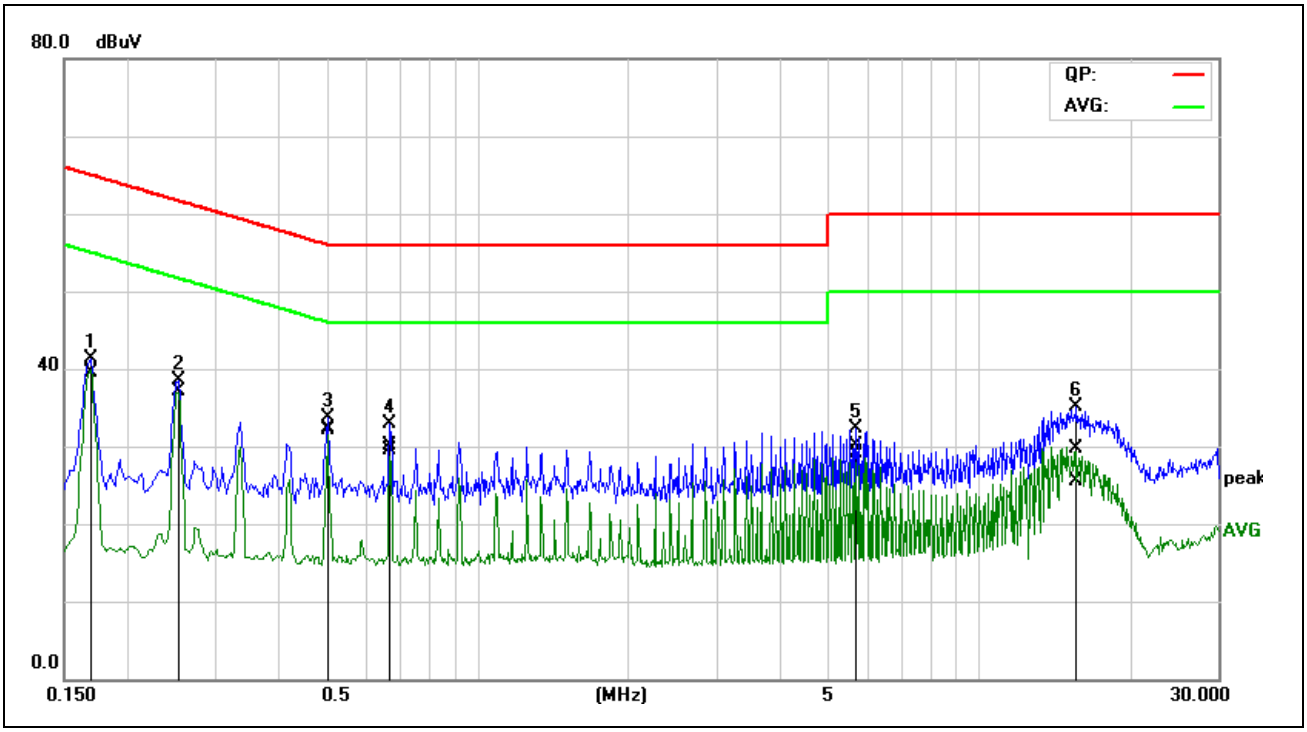
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	19:36:58
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 48V
Model:	DDR-240C-48	Description:	Mode 7



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1675	19.99	20.08	19.42	39.41	39.50	65.08	55.08	-25.67	-15.58	Pass
2	0.2522	17.59	17.60	19.46	37.05	37.06	61.68	51.68	-24.63	-14.62	Pass
3*	0.5029	12.89	12.59	19.49	32.38	32.08	56.00	46.00	-23.62	-13.92	Pass
4	0.6701	10.54	9.98	19.51	30.05	29.49	56.00	46.00	-25.95	-16.51	Pass
5	5.7051	10.42	9.31	19.70	30.12	29.01	60.00	50.00	-29.88	-20.99	Pass
6	15.6937	9.64	5.51	20.00	29.64	25.51	60.00	50.00	-30.36	-24.49	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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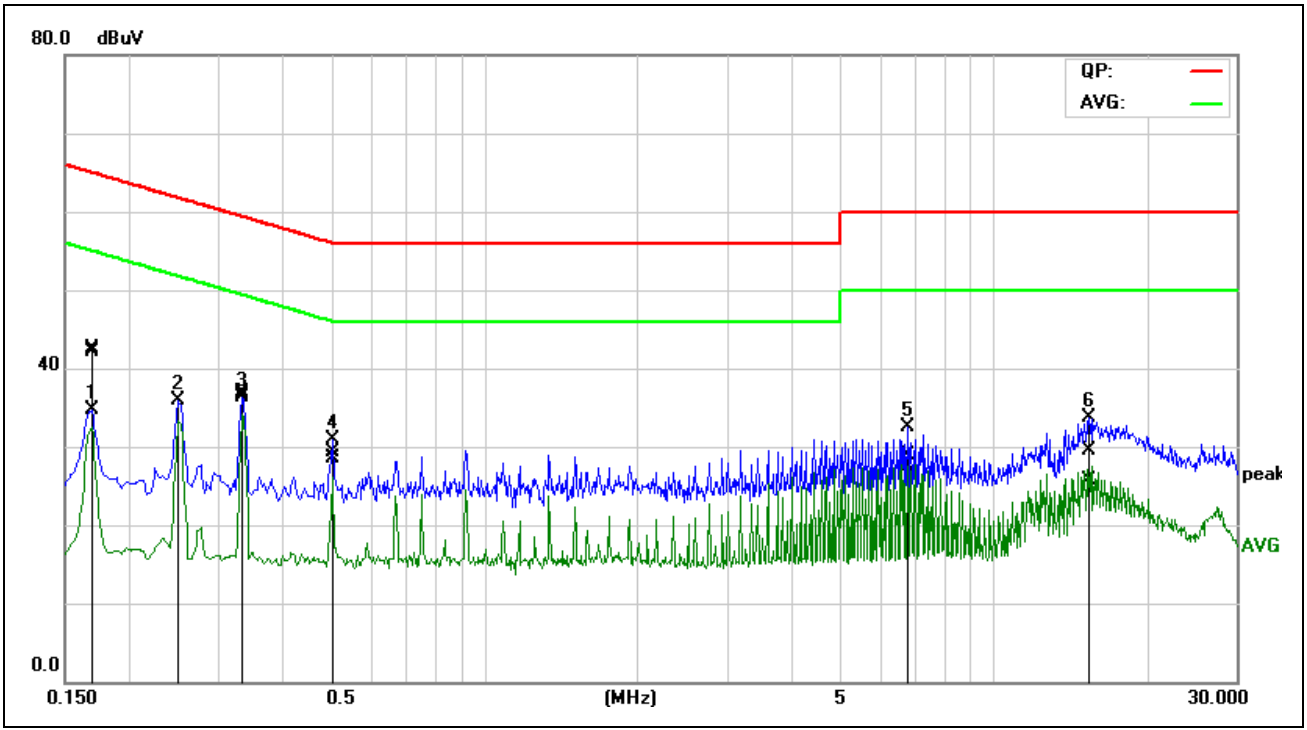
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	19:46:31
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 48V
Model:	DDR-240C-48	Description:	Mode 8



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1682	23.07	22.59	19.43	42.50	42.02	65.04	55.05	-22.54	-13.03	Pass
2	0.2504	16.43	16.39	19.47	35.90	35.86	61.74	51.74	-25.84	-15.88	Pass
3*	0.3363	17.31	17.34	19.48	36.79	36.82	59.29	49.29	-22.50	-12.47	Pass
4	0.5010	9.74	9.10	19.49	29.23	28.59	56.00	46.00	-26.77	-17.41	Pass
5	6.7938	9.19	7.67	19.76	28.95	27.43	60.00	50.00	-31.05	-22.57	Pass
6	15.4324	9.45	5.58	20.06	29.51	25.64	60.00	50.00	-30.49	-24.36	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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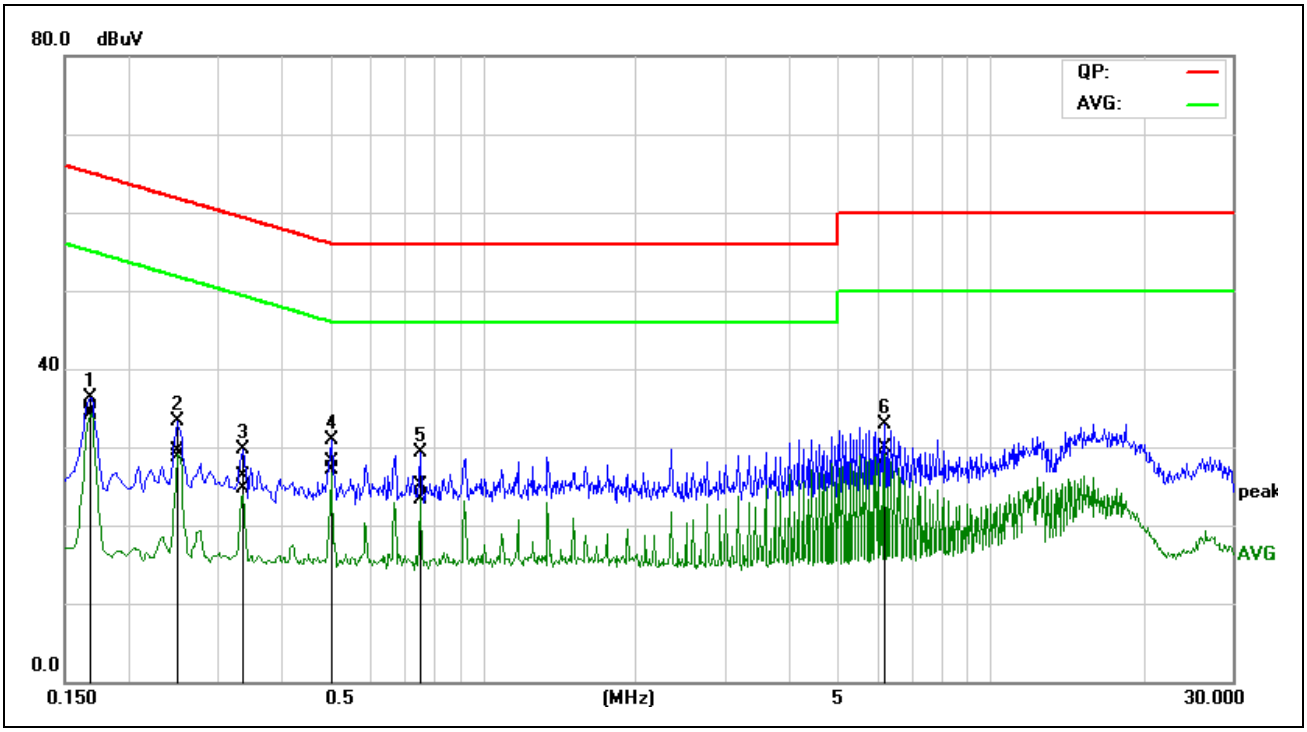
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	19:41:55
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 48V
Model:	DDR-240C-48	Description:	Mode 8



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1662	15.01	14.78	19.42	34.43	34.20	65.14	55.15	-30.71	-20.95	Pass
2	0.2497	10.10	9.31	19.45	29.55	28.76	61.76	51.77	-32.21	-23.01	Pass
3	0.3358	6.85	5.30	19.47	26.32	24.77	59.30	49.31	-32.98	-24.54	Pass
4*	0.5032	8.66	7.64	19.49	28.15	27.13	56.00	46.00	-27.85	-18.87	Pass
5	0.7566	5.48	3.85	19.53	25.01	23.38	56.00	46.00	-30.99	-22.62	Pass
6	6.2085	10.14	8.79	19.72	29.86	28.51	60.00	50.00	-30.14	-21.49	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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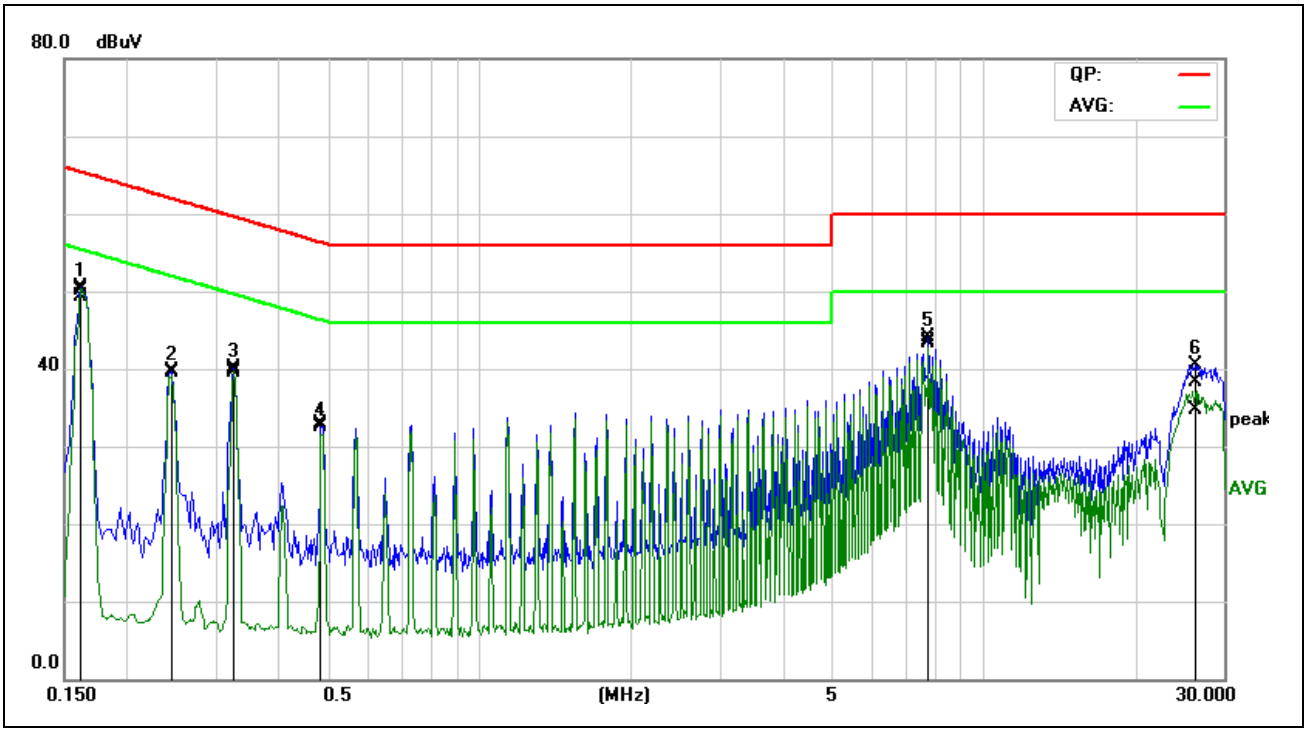
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	21:24:20
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 110V
Model:	DDR-240D-24	Description:	Mode 9



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1620	40.23	39.38	9.97	50.20	49.35	65.36	55.36	-15.16	-6.01	Pass
2	0.2440	29.55	29.80	9.96	39.51	39.76	61.96	51.96	-22.45	-12.20	Pass
3	0.3250	29.63	29.91	9.97	39.60	39.88	59.58	49.58	-19.98	-9.70	Pass
4	0.4871	22.76	22.98	9.97	32.73	32.95	56.22	46.22	-23.49	-13.27	Pass
5	7.7931	33.21	33.16	10.24	43.45	43.40	60.00	50.00	-16.55	-6.60	Pass
6	26.2963	26.99	23.52	11.28	38.27	34.80	60.00	50.00	-21.73	-15.20	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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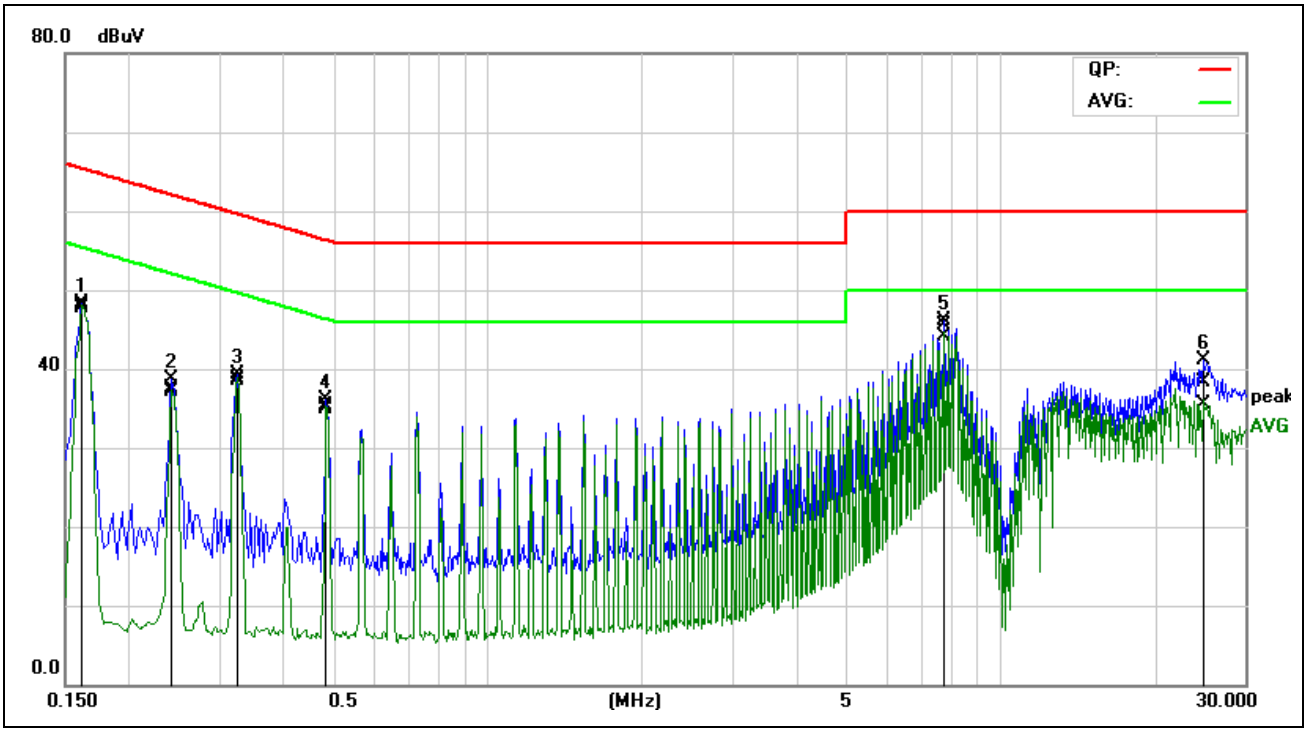
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	21:28:48
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 110V
Model:	DDR-240D-24	Description:	Mode 9



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1620	37.68	37.95	9.98	47.66	47.93	65.36	55.36	-17.70	-7.43	Pass
2	0.2434	27.18	27.43	9.98	37.16	37.41	61.98	51.98	-24.82	-14.57	Pass
3	0.3243	28.53	28.81	9.98	38.51	38.79	59.59	49.60	-21.08	-10.81	Pass
4	0.4850	24.98	25.24	9.98	34.96	35.22	56.25	46.25	-21.29	-11.03	Pass
5*	7.7788	35.24	33.94	10.21	45.45	44.15	60.00	50.00	-14.55	-5.85	Pass
6	24.7872	27.37	24.52	11.00	38.37	35.52	60.00	50.00	-21.63	-14.48	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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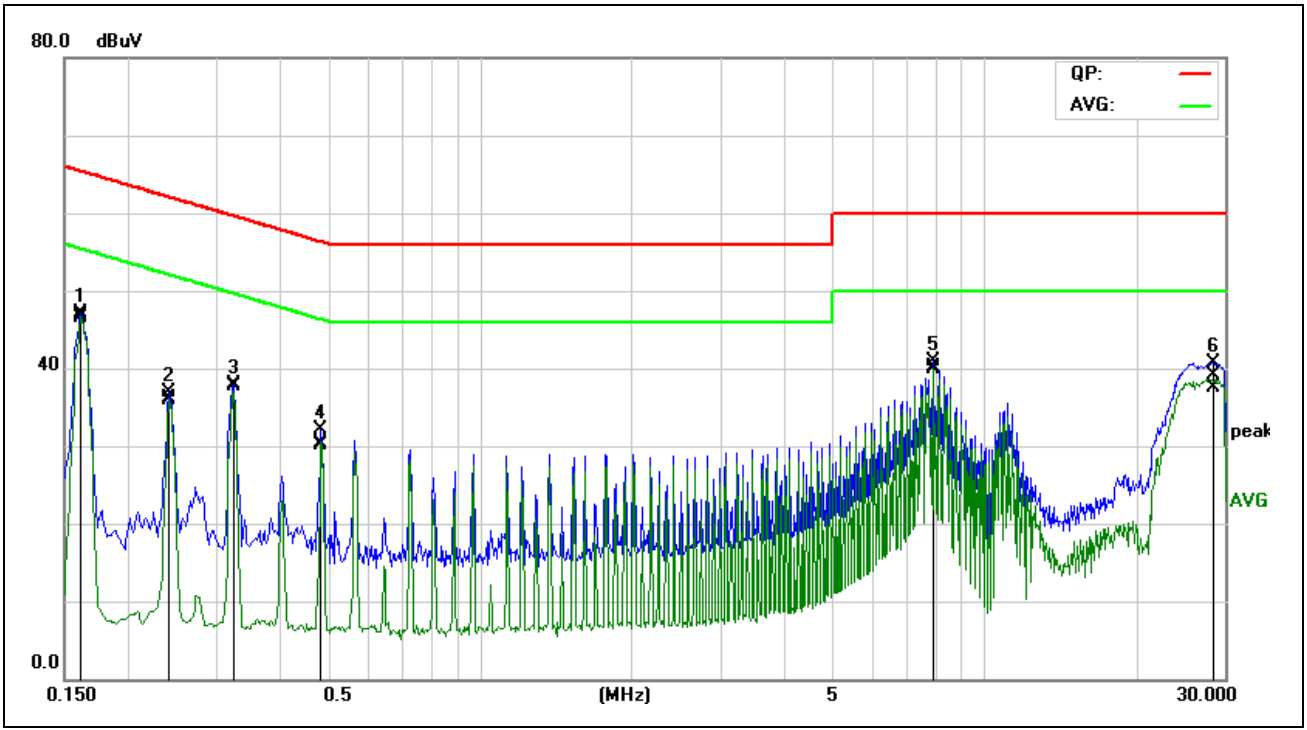
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	21:41:30
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 110V
Model:	DDR-240D-24	Description:	Mode 10



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1619	36.60	36.86	9.97	46.57	46.83	65.36	55.37	-18.79	-8.54	Pass
2	0.2427	25.99	26.20	9.96	35.95	36.16	62.00	52.00	-26.05	-15.84	Pass
3	0.3231	27.70	27.97	9.97	37.67	37.94	59.62	49.63	-21.95	-11.69	Pass
4	0.4858	20.19	20.35	9.97	30.16	30.32	56.24	46.24	-26.08	-15.92	Pass
5	7.9281	29.88	29.74	10.25	40.13	39.99	60.00	50.00	-19.87	-10.01	Pass
6	28.5503	27.75	26.11	11.37	39.12	37.48	60.00	50.00	-20.88	-12.52	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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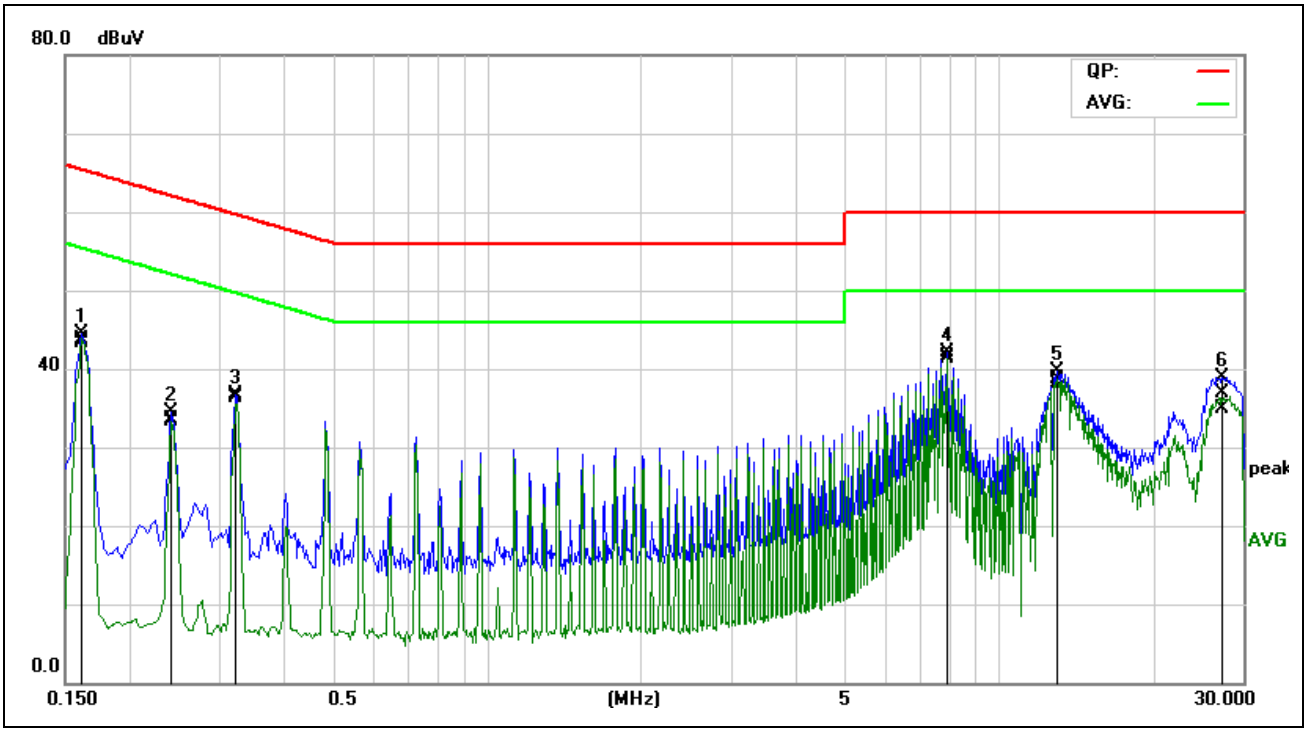
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	21:33:59
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 110V
Model:	DDR-240D-24	Description:	Mode 10



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1607	33.38	33.63	9.98	43.36	43.61	65.42	55.43	-22.06	-11.82	Pass
2	0.2424	23.38	23.56	9.98	33.36	33.54	62.01	52.01	-28.65	-18.47	Pass
3	0.3231	26.27	26.54	9.98	36.25	36.52	59.62	49.63	-23.37	-13.11	Pass
4*	7.9302	31.22	31.06	10.22	41.44	41.28	60.00	50.00	-18.56	-8.72	Pass
5	13.0299	28.31	27.70	10.47	38.78	38.17	60.00	50.00	-21.22	-11.83	Pass
6	27.2672	25.84	23.84	11.09	36.93	34.93	60.00	50.00	-23.07	-15.07	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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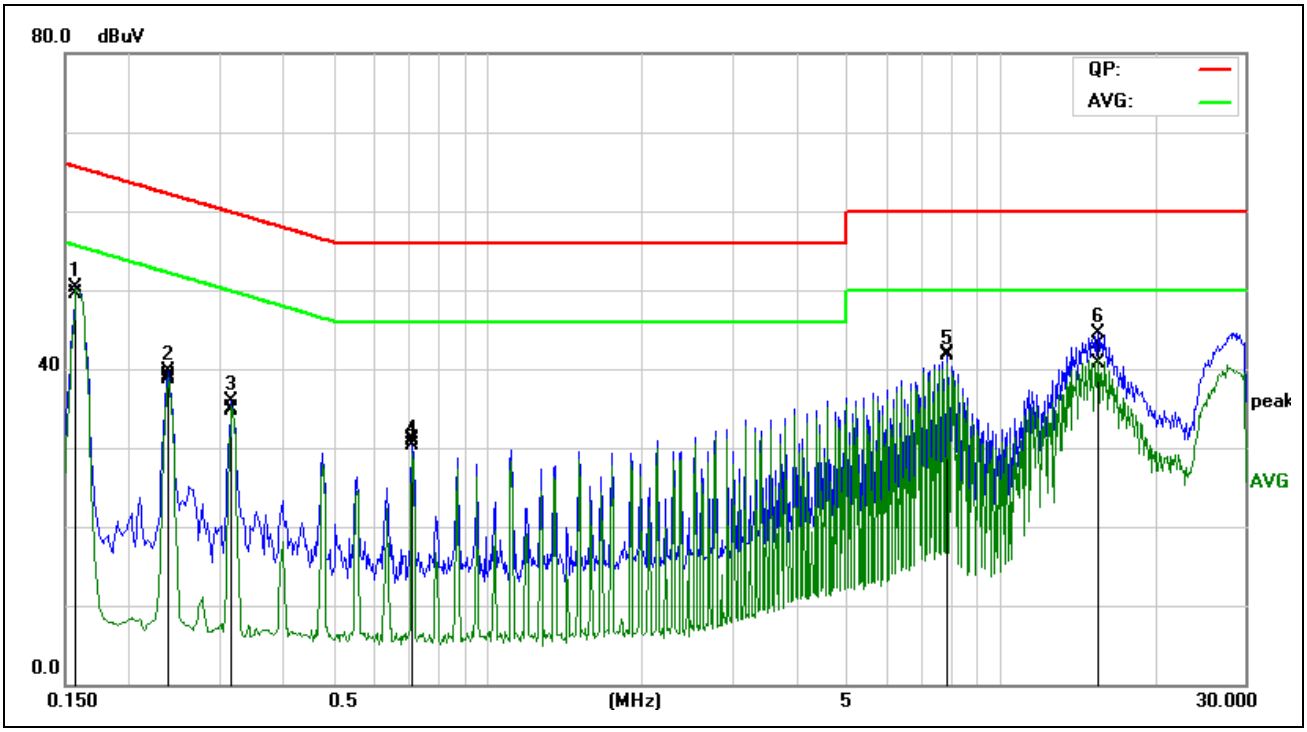
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	21:01:36
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 110V
Model:	DDR-240D-48	Description:	Mode 11



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1590	40.30	39.55	9.97	50.27	49.52	65.51	55.52	-15.24	-6.00	Pass
2	0.2378	28.83	29.07	9.96	38.79	39.03	62.17	52.17	-23.38	-13.14	Pass
3	0.3192	24.77	25.02	9.97	34.74	34.99	59.73	49.73	-24.99	-14.74	Pass
4	0.7147	20.87	21.07	10.01	30.88	31.08	56.00	46.00	-25.12	-14.92	Pass
5	7.8589	31.70	31.73	10.25	41.95	41.98	60.00	50.00	-18.05	-8.02	Pass
6	15.4809	32.46	30.03	10.68	43.14	40.71	60.00	50.00	-16.86	-9.29	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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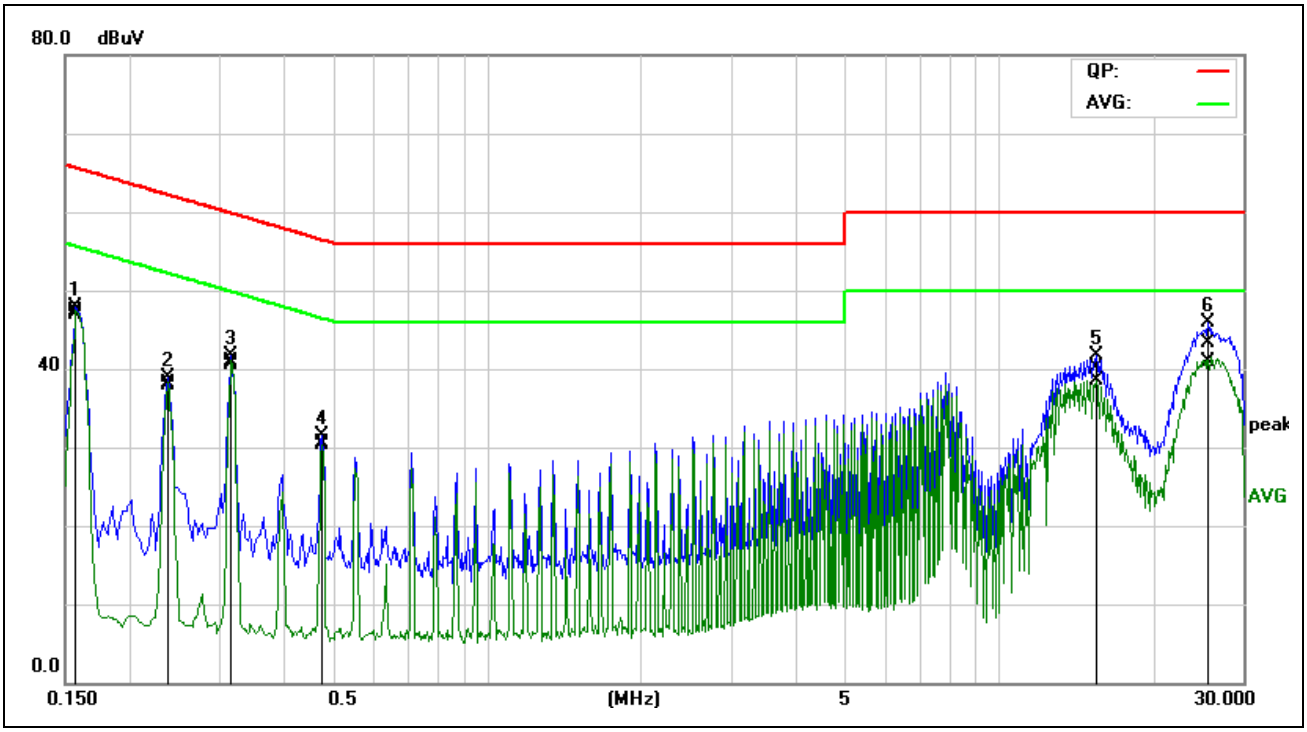
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	21:06:33
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 110V
Model:	DDR-240D-48	Description:	Mode 11



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1576	37.02	37.28	9.98	47.00	47.26	65.58	55.59	-18.58	-8.33	Pass
2	0.2378	27.90	28.14	9.98	37.88	38.12	62.17	52.17	-24.29	-14.05	Pass
3	0.3164	30.61	30.90	9.98	40.59	40.88	59.80	49.80	-19.21	-8.92	Pass
4	0.4775	20.29	20.47	9.98	30.27	30.45	56.38	46.38	-26.11	-15.93	Pass
5	15.4614	29.43	27.88	10.59	40.02	38.47	60.00	50.00	-19.98	-11.53	Pass
6	25.6892	32.21	29.96	11.03	43.24	40.99	60.00	50.00	-16.76	-9.01	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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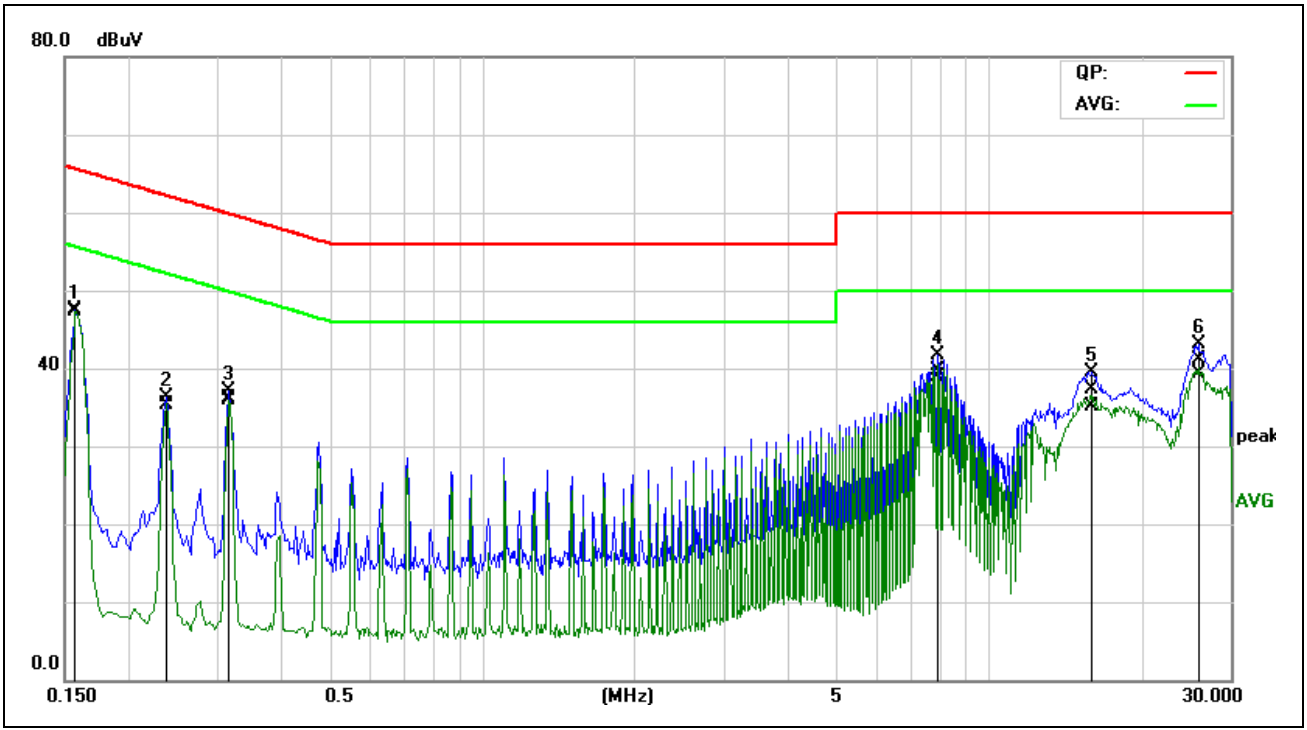
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	21:17:09
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 110V
Model:	DDR-240D-48	Description:	Mode 12



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1577	37.34	37.59	9.97	47.31	47.56	65.58	55.58	-18.27	-8.02	Pass
2	0.2371	25.27	25.44	9.96	35.23	35.40	62.19	52.20	-26.96	-16.80	Pass
3	0.3164	25.85	26.10	9.97	35.82	36.07	59.80	49.80	-23.98	-13.73	Pass
4	7.9235	29.46	28.71	10.25	39.71	38.96	60.00	50.00	-20.29	-11.04	Pass
5	16.0040	26.60	24.37	10.71	37.31	35.08	60.00	50.00	-22.69	-14.92	Pass
6	25.9020	29.83	28.08	11.27	41.10	39.35	60.00	50.00	-18.90	-10.65	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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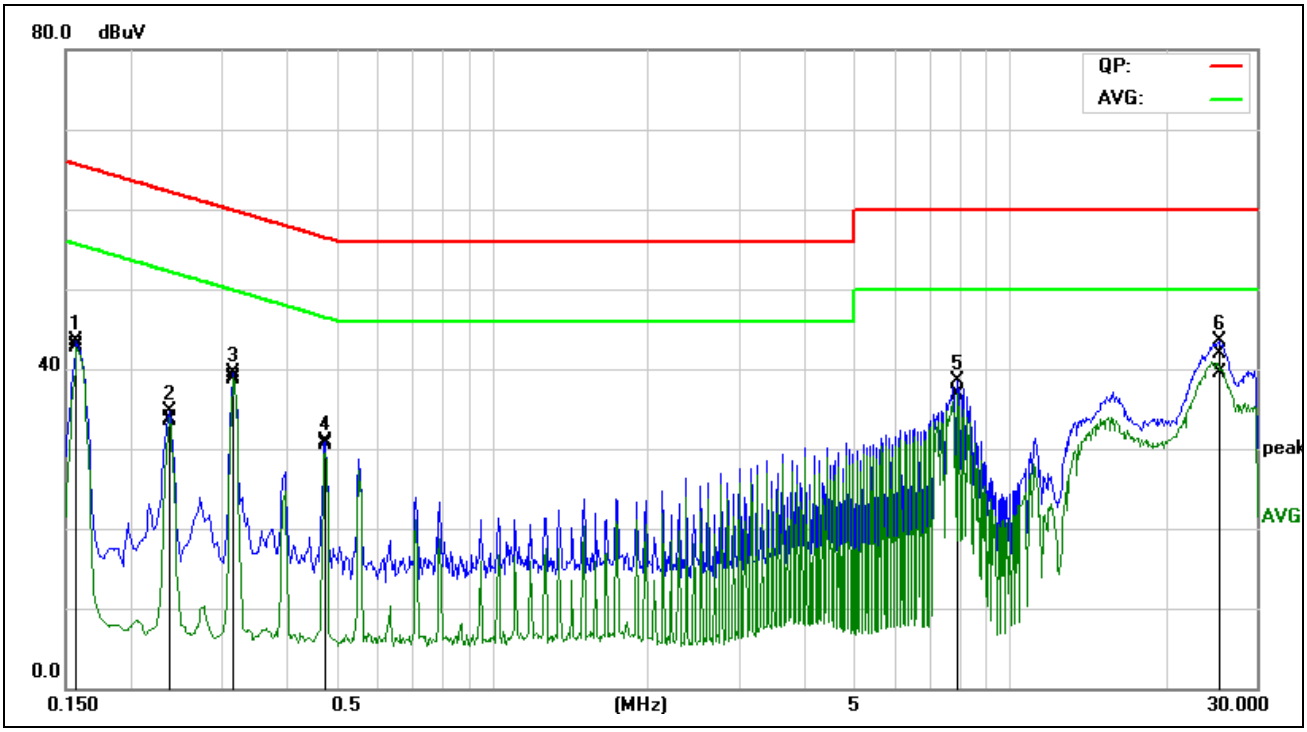
Job No.:	C180611E01	Date:	2018/6/21
Company:	MEAN WELL	Time:	21:12:23
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 110V
Model:	DDR-240D-48	Description:	Mode 12



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1582	32.76	32.99	9.98	42.74	42.97	65.55	55.56	-22.81	-12.59	Pass
2	0.2370	23.52	23.66	9.98	33.50	33.64	62.20	52.20	-28.70	-18.56	Pass
3	0.3175	28.69	28.97	9.98	38.67	38.95	59.77	49.77	-21.10	-10.82	Pass
4	0.4758	20.58	20.75	9.98	30.56	30.73	56.41	46.41	-25.85	-15.68	Pass
5	7.9225	26.68	26.39	10.22	36.90	36.61	60.00	50.00	-23.10	-13.39	Pass
6*	25.4325	30.89	28.43	11.03	41.92	39.46	60.00	50.00	-18.08	-10.54	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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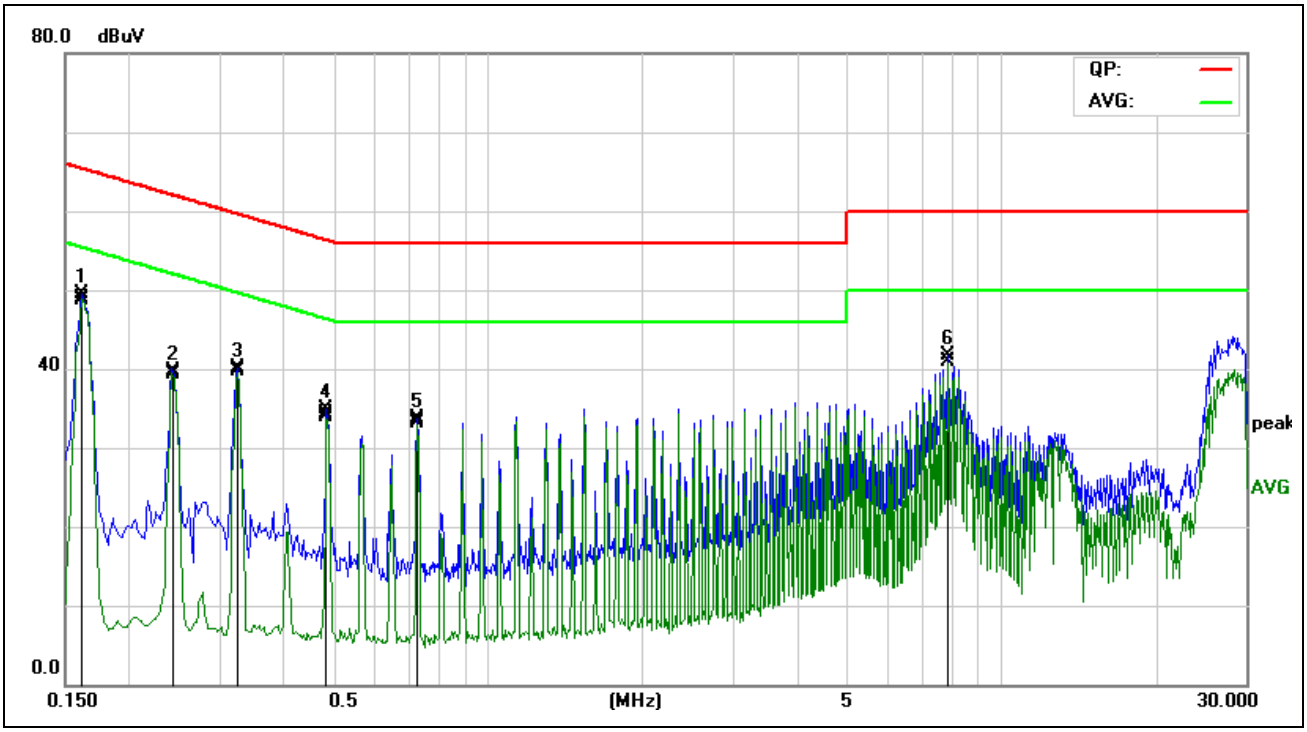
Job No.:	C180611E01	Date:	2018/7/6
Company:	MEAN WELL	Time:	22:26:19
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 96V
Model:	DDR-240D-24	Description:	Mode 13



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1621	38.75	39.02	9.97	48.72	48.99	65.36	55.36	-16.64	-6.37	Pass
2	0.2443	29.36	29.62	9.96	39.32	39.58	61.95	51.95	-22.63	-12.37	Pass
3	0.3239	29.68	29.96	9.97	39.65	39.93	59.61	49.61	-19.96	-9.68	Pass
4	0.4877	24.01	24.26	9.97	33.98	34.23	56.21	46.21	-22.23	-11.98	Pass
5	0.7302	23.15	23.39	10.02	33.17	33.41	56.00	46.00	-22.83	-12.59	Pass
6	7.8605	30.71	30.62	10.25	40.96	40.87	60.00	50.00	-19.04	-9.13	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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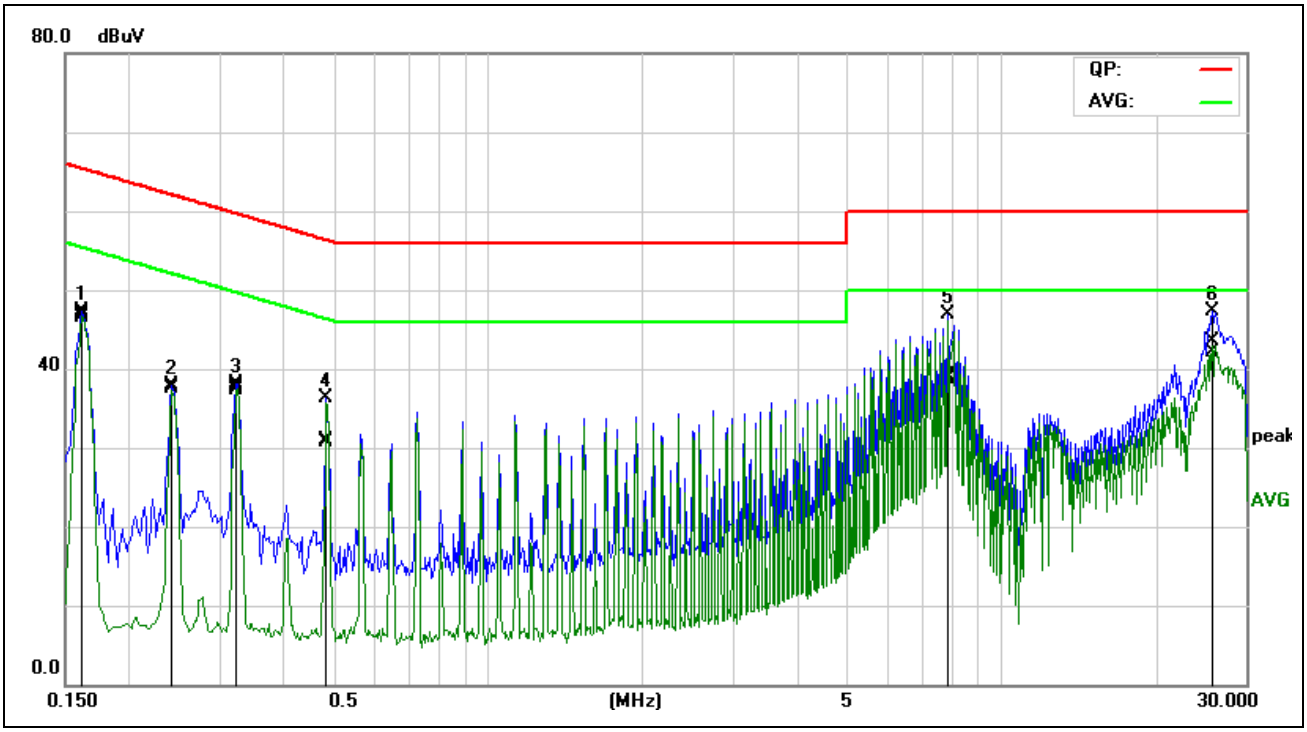
Job No.:	C180611E01	Date:	2018/7/6
Company:	MEAN WELL	Time:	22:31:48
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 96V
Model:	DDR-240D-24	Description:	Mode 13



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1617	36.59	36.86	9.98	46.57	46.84	65.38	55.38	-18.81	-8.54	Pass
2	0.2428	27.43	27.67	9.98	37.41	37.65	62.00	52.00	-24.59	-14.35	Pass
3	0.3252	27.41	27.68	9.98	37.39	37.66	59.57	49.57	-22.18	-11.91	Pass
4	0.4872	20.74	20.91	9.98	30.72	30.89	56.22	46.22	-25.50	-15.33	Pass
5	7.8537	28.82	28.58	10.22	39.04	38.80	60.00	50.00	-20.96	-11.20	Pass
6*	25.8208	32.50	31.05	11.04	43.54	42.09	60.00	50.00	-16.46	-7.91	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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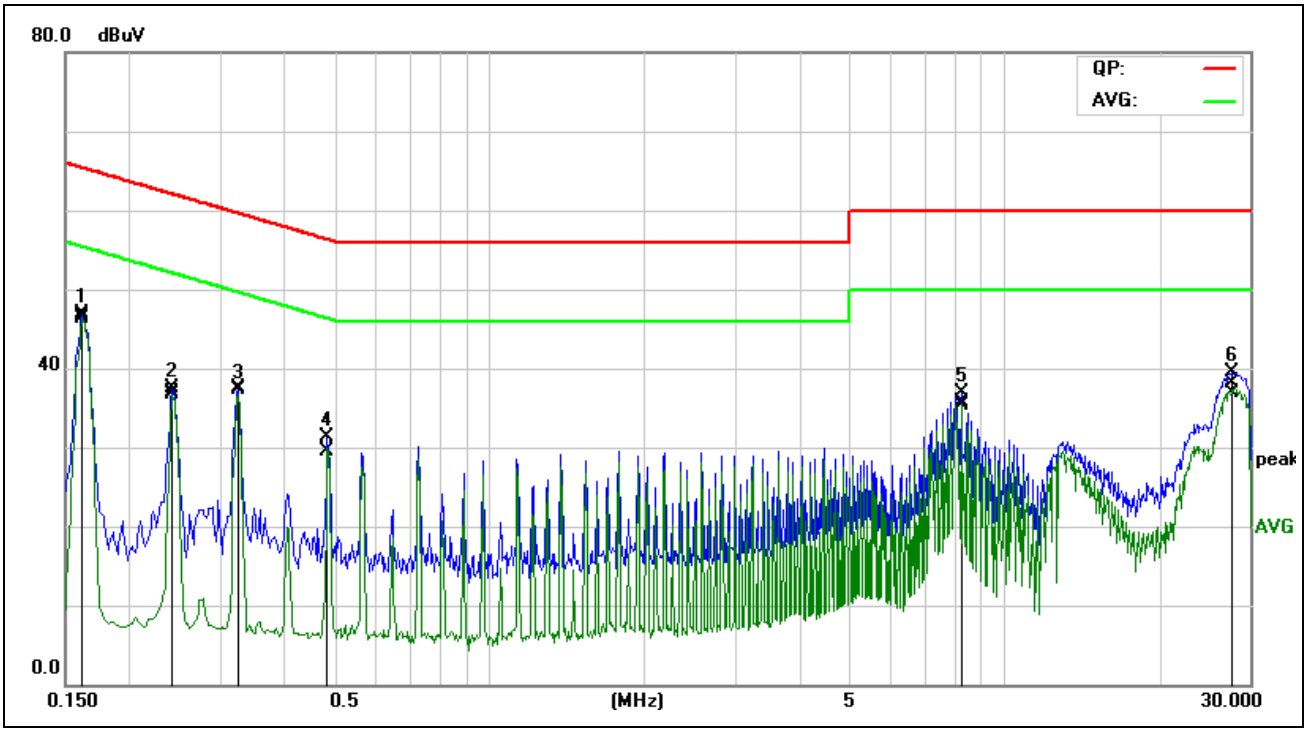
Job No.:	C180611E01	Date:	2018/7/6
Company:	MEAN WELL	Time:	22:47:46
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 96V
Model:	DDR-240D-24	Description:	Mode 14



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1617	36.37	36.63	9.97	46.34	46.60	65.38	55.38	-19.04	-8.78	Pass
2	0.2440	26.69	26.90	9.96	36.65	36.86	61.96	51.96	-25.31	-15.10	Pass
3	0.3242	27.27	27.53	9.97	37.24	37.50	59.60	49.60	-22.36	-12.10	Pass
4	0.4851	19.51	19.62	9.97	29.48	29.59	56.25	46.25	-26.77	-16.66	Pass
5	8.2647	25.37	24.94	10.27	35.64	35.21	60.00	50.00	-24.36	-14.79	Pass
6	27.7882	26.71	25.61	11.34	38.05	36.95	60.00	50.00	-21.95	-13.05	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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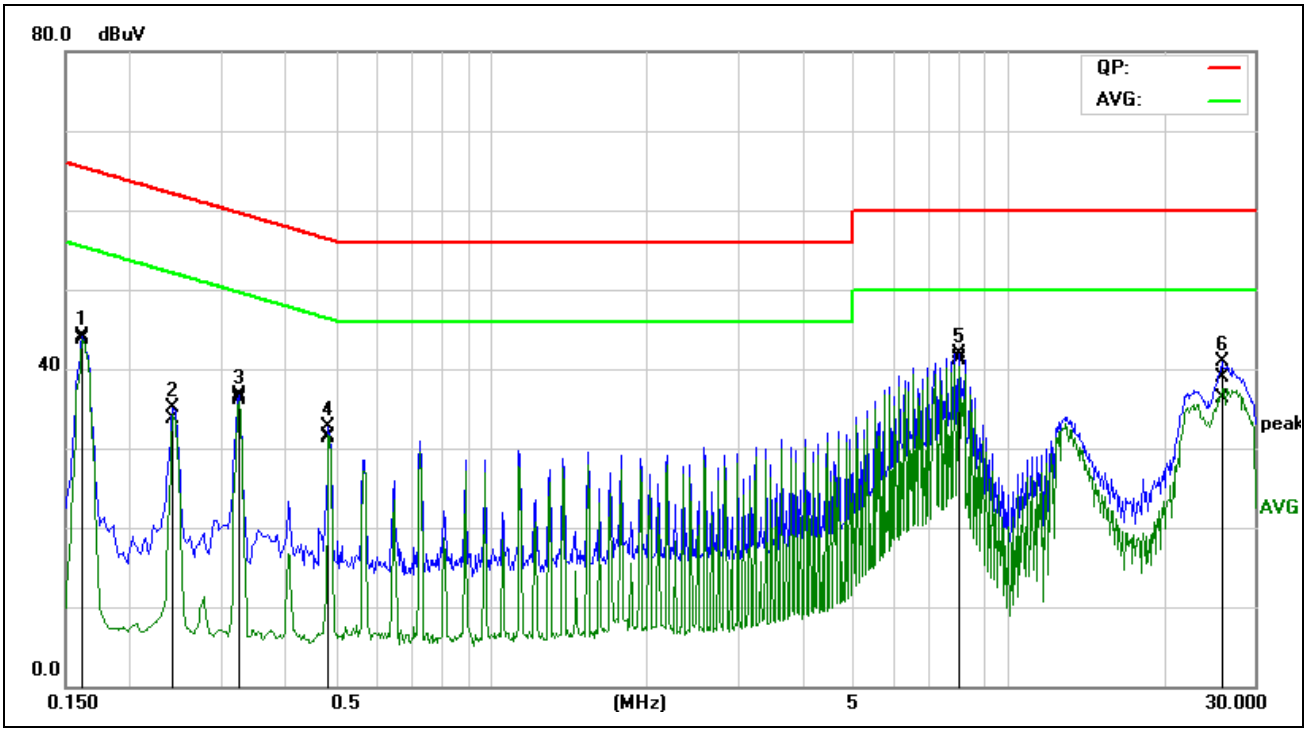
Job No.:	C180611E01	Date:	2018/7/6
Company:	MEAN WELL	Time:	22:43:07
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 96V
Model:	DDR-240D-24	Description:	Mode 14



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1616	33.64	33.90	9.98	43.62	43.88	65.38	55.38	-21.76	-11.50	Pass
2	0.2415	23.63	23.82	9.98	33.61	33.80	62.04	52.04	-28.43	-18.24	Pass
3	0.3235	26.06	26.32	9.98	36.04	36.30	59.62	49.62	-23.58	-13.32	Pass
4	0.4854	21.38	21.55	9.98	31.36	31.53	56.25	46.25	-24.89	-14.72	Pass
5*	8.0236	31.01	30.78	10.23	41.24	41.01	60.00	50.00	-18.76	-8.99	Pass
6	25.9300	27.85	25.35	11.04	38.89	36.39	60.00	50.00	-21.11	-13.61	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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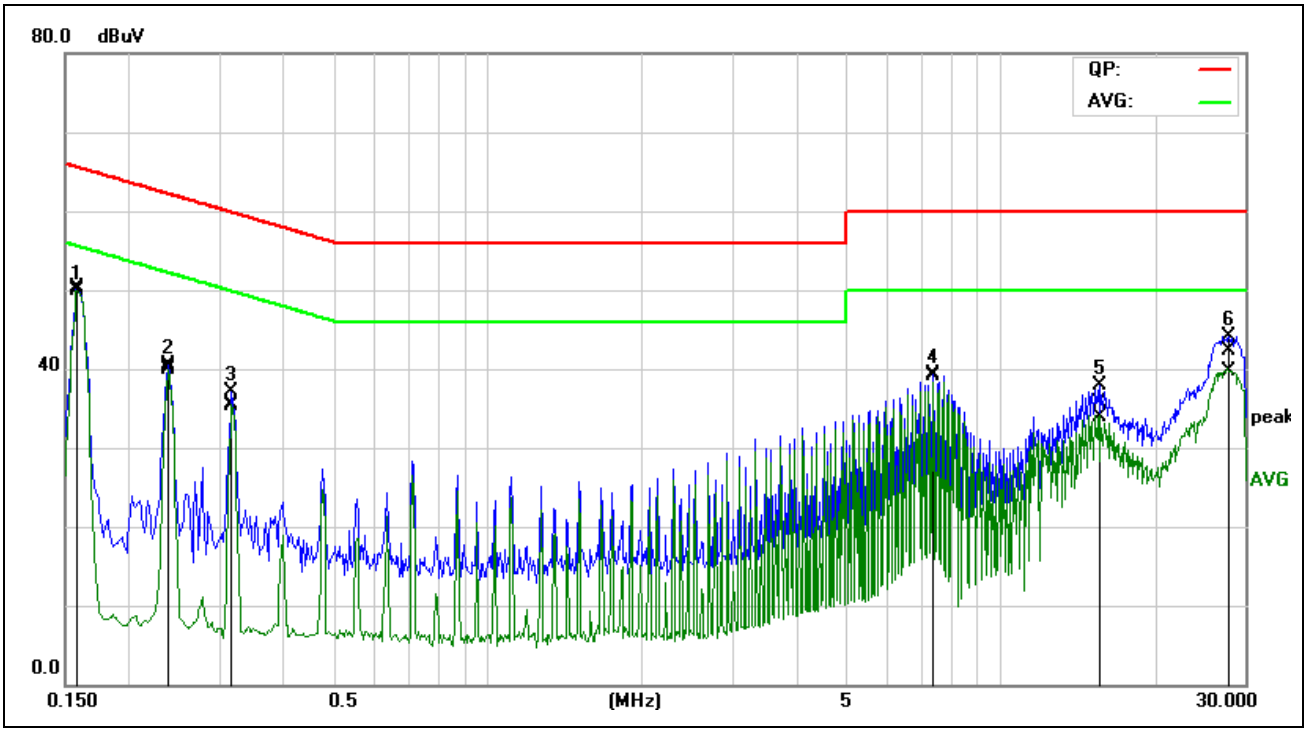
Job No.:	C180611E01	Date:	2018/7/6
Company:	MEAN WELL	Time:	23:03:30
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 96V
Model:	DDR-240D-48	Description:	Mode 15



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1592	40.13	40.39	9.97	50.10	50.36	65.51	55.51	-15.41	-5.15	Pass
2	0.2383	29.86	30.11	9.96	39.82	40.07	62.16	52.16	-22.34	-12.09	Pass
3	0.3176	25.30	25.54	9.97	35.27	35.51	59.77	49.77	-24.50	-14.26	Pass
4	7.3870	29.17	28.97	10.22	39.39	39.19	60.00	50.00	-20.61	-10.81	Pass
5	15.6432	25.05	23.21	10.69	35.74	33.90	60.00	50.00	-24.26	-16.10	Pass
6	27.9503	30.96	28.38	11.34	42.30	39.72	60.00	50.00	-17.70	-10.28	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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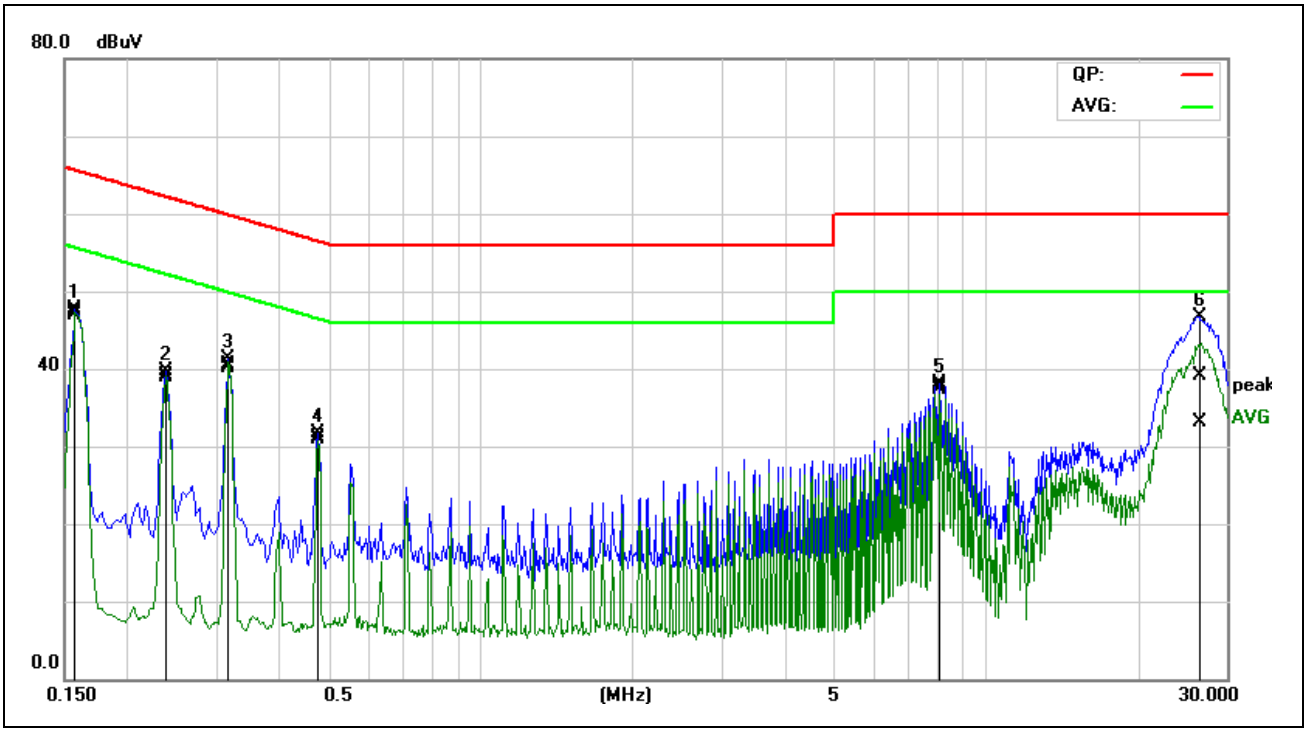
Job No.:	C180611E01	Date:	2018/7/6
Company:	MEAN WELL	Time:	23:08:21
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 96V
Model:	DDR-240D-48	Description:	Mode 15



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1575	37.00	37.24	9.98	46.98	47.22	65.59	55.59	-18.61	-8.37	Pass
2	0.2384	28.88	29.11	9.98	38.86	39.09	62.15	52.15	-23.29	-13.06	Pass
3	0.3165	30.22	30.49	9.98	40.20	40.47	59.80	49.80	-19.60	-9.33	Pass
4	0.4763	21.01	21.17	9.98	30.99	31.15	56.40	46.40	-25.41	-15.25	Pass
5	8.0916	27.43	27.16	10.23	37.66	37.39	60.00	50.00	-22.34	-12.61	Pass
6	26.4201	28.10	22.00	11.06	39.16	33.06	60.00	50.00	-20.84	-16.94	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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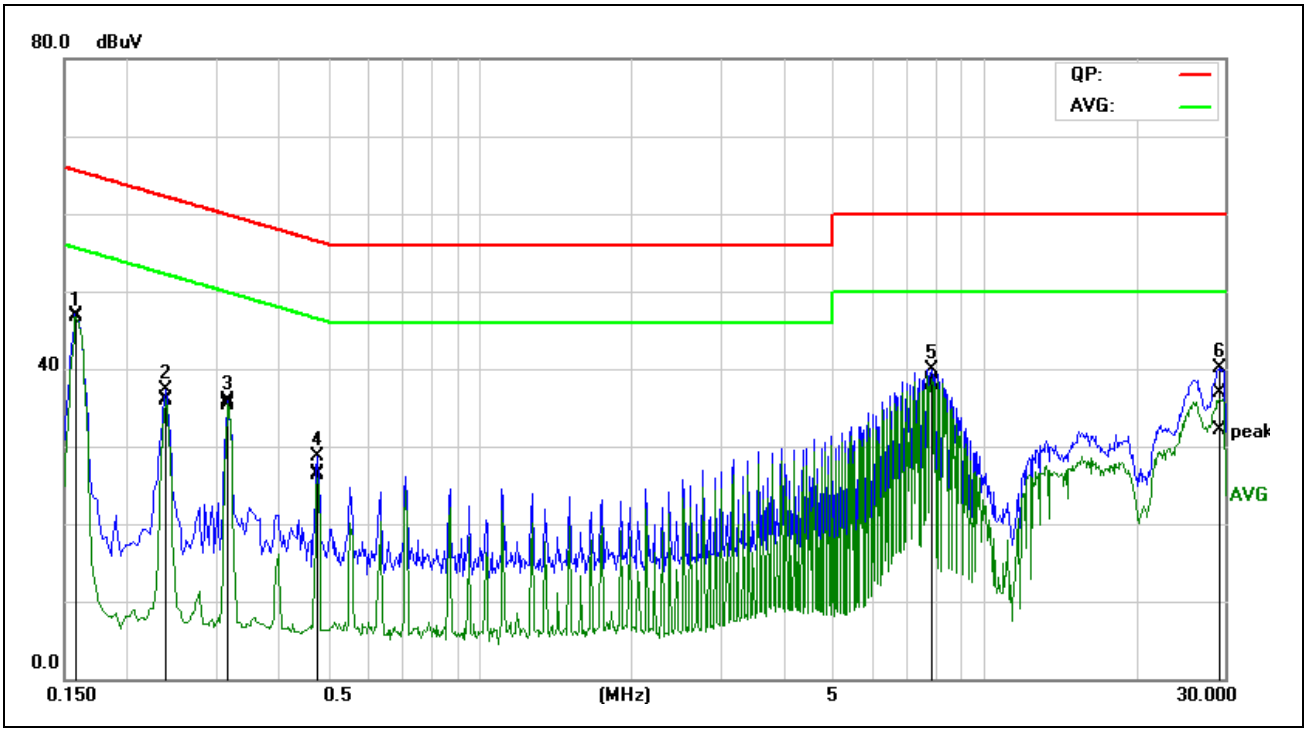
Job No.:	C180611E01	Date:	2018/7/6
Company:	MEAN WELL	Time:	23:22:00
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L1	Test Voltage:	DC 96V
Model:	DDR-240D-48	Description:	Mode 16



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1598	36.64	36.88	9.97	46.61	46.85	65.47	55.47	-18.86	-8.62	Pass
2	0.2388	26.03	26.21	9.96	35.99	36.17	62.14	52.14	-26.15	-15.97	Pass
3	0.3173	25.36	25.61	9.97	35.33	35.58	59.78	49.78	-24.45	-14.20	Pass
4	0.4752	16.46	16.41	9.97	26.43	26.38	56.42	46.42	-29.99	-20.04	Pass
5	7.8529	28.02	27.62	10.25	38.27	37.87	60.00	50.00	-21.73	-12.13	Pass
6	29.3475	25.50	20.63	11.40	36.90	32.03	60.00	50.00	-23.10	-17.97	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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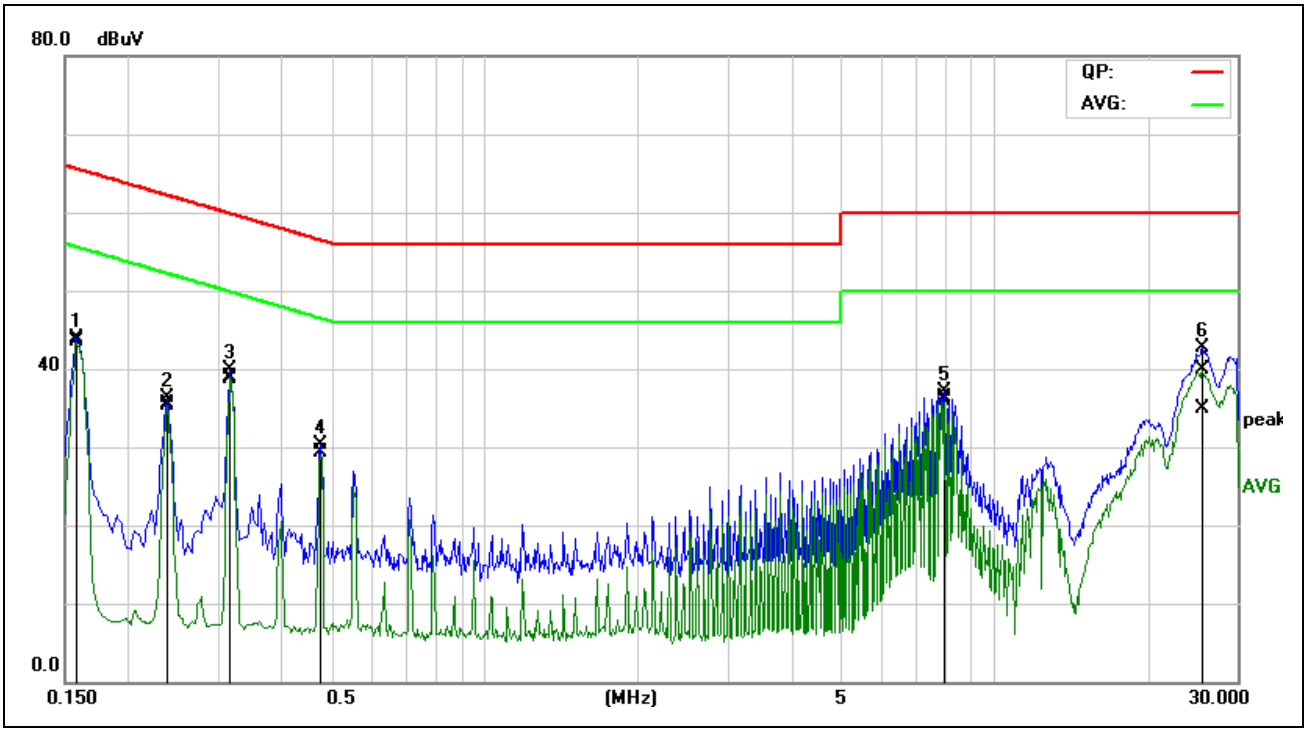
Job No.:	C180611E01	Date:	2018/7/6
Company:	MEAN WELL	Time:	23:17:07
Standard:	EN 50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Tao.Jiang
Line:	L2	Test Voltage:	DC 96V
Model:	DDR-240D-48	Description:	Mode 16



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1594	33.52	33.74	9.98	43.50	43.72	65.50	55.50	-22.00	-11.78	Pass
2	0.2382	25.28	25.46	9.98	35.26	35.44	62.16	52.16	-26.90	-16.72	Pass
3*	0.3173	28.66	28.93	9.98	38.64	38.91	59.78	49.78	-21.14	-10.87	Pass
4	0.4769	19.26	19.36	9.98	29.24	29.34	56.39	46.39	-27.15	-17.05	Pass
5	8.0123	26.00	25.65	10.23	36.23	35.88	60.00	50.00	-23.77	-14.12	Pass
6	25.7036	28.82	23.85	11.03	39.85	34.88	60.00	50.00	-20.15	-15.12	Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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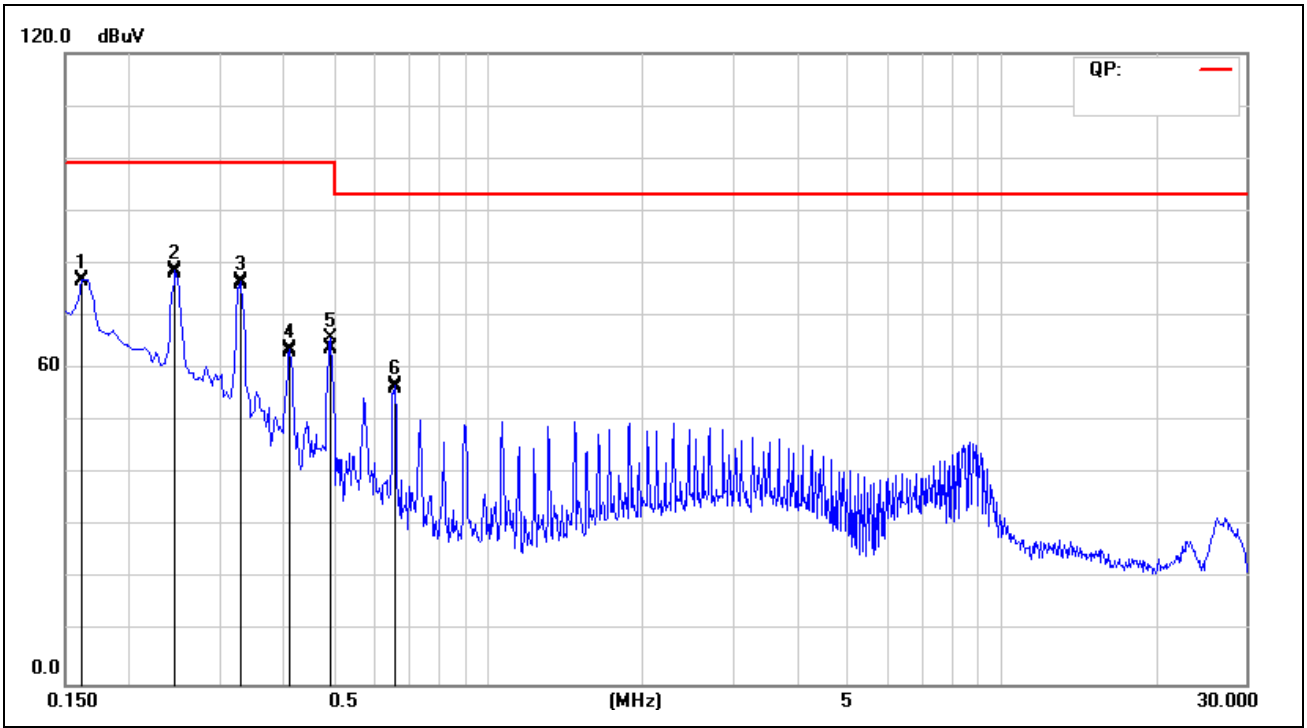
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:19:07
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 24V
Model:	DDR-240B-24	Description:	Mode 1(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1620	66.71		9.97	76.68		99.00		-22.32		Pass
2	0.2460	68.49		9.96	78.45		99.00		-20.55		Pass
3	0.3300	66.40		9.97	76.37		99.00		-22.63		Pass
4	0.4105	53.53		9.97	63.50		99.00		-35.50		Pass
5*	0.4940	54.15		9.97	64.12		99.00		-34.88		Pass
6	0.6580	46.43		10.00	56.43		93.00		-36.57		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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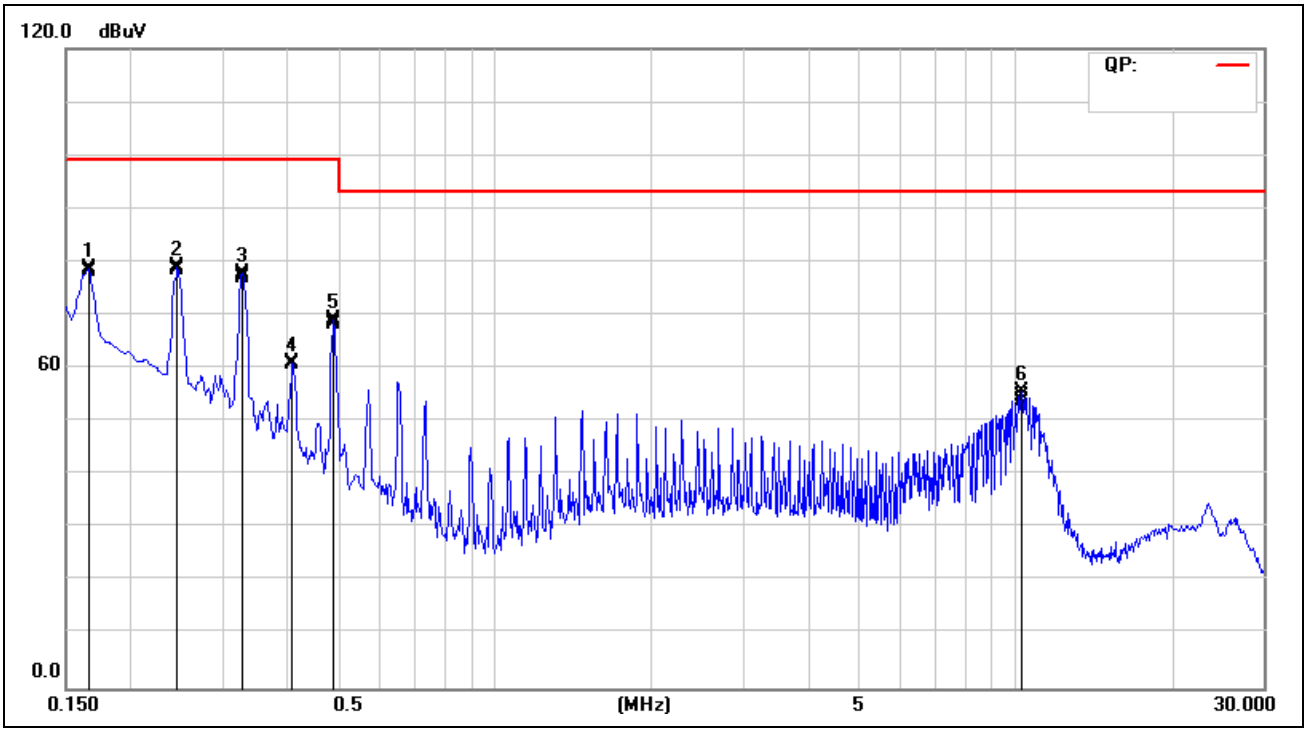
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:24:03
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 24V
Model:	DDR-240B-24	Description:	Mode 1(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1660	68.23		9.98	78.21		99.00		-20.79		Pass
2	0.2460	68.81		9.98	78.79		99.00		-20.21		Pass
3	0.3268	67.40		9.98	77.38		99.00		-21.62		Pass
4*	0.4100	50.87		9.98	60.85		99.00		-38.15		Pass
5	0.4900	58.78		9.98	68.76		99.00		-30.24		Pass
6	10.3139	44.29		10.34	54.63		93.00		-38.37		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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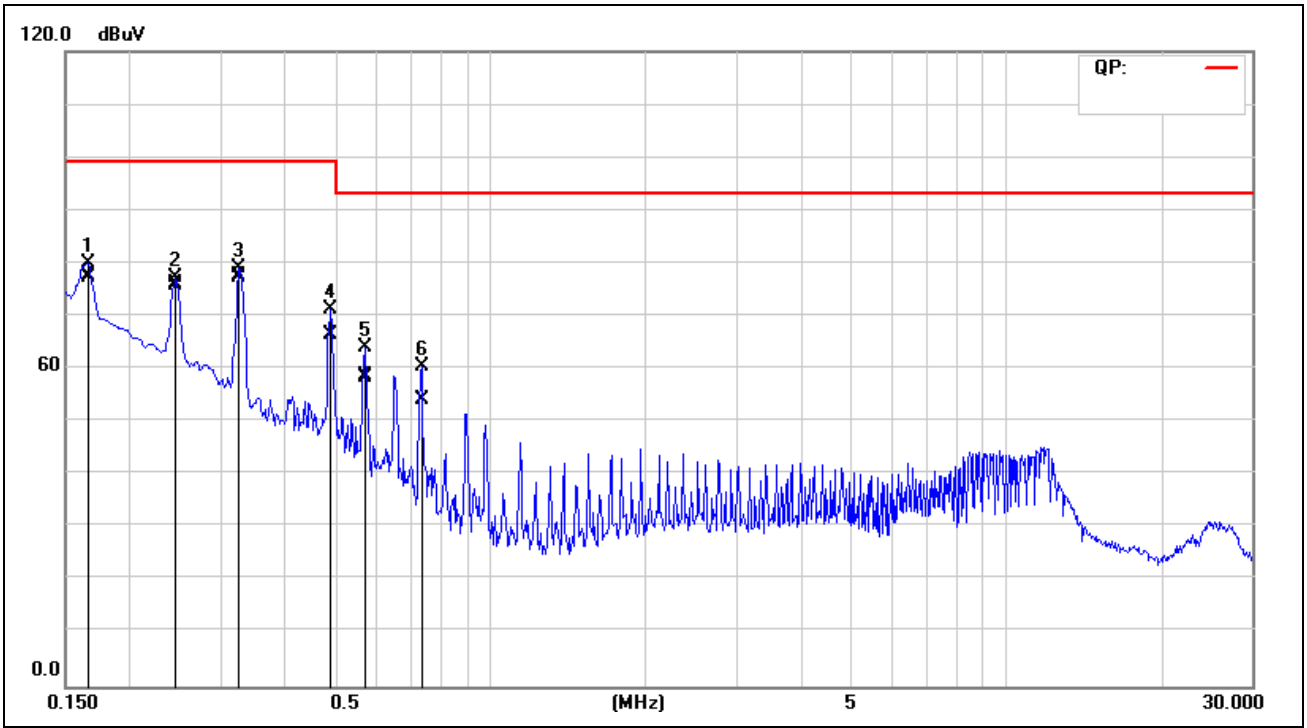
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:36:37
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 24V
Model:	DDR-240B-24	Description:	Mode 2(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1636	67.60		9.97	77.57		99.00		-21.43		Pass
2	0.2447	66.08		9.96	76.04		99.00		-22.96		Pass
3	0.3279	67.43		9.97	77.40		99.00		-21.60		Pass
4*	0.4906	56.53		9.97	66.50		99.00		-32.50		Pass
5	0.5726	48.73		9.98	58.71		93.00		-34.29		Pass
6	0.7362	44.21		10.02	54.23		93.00		-38.77		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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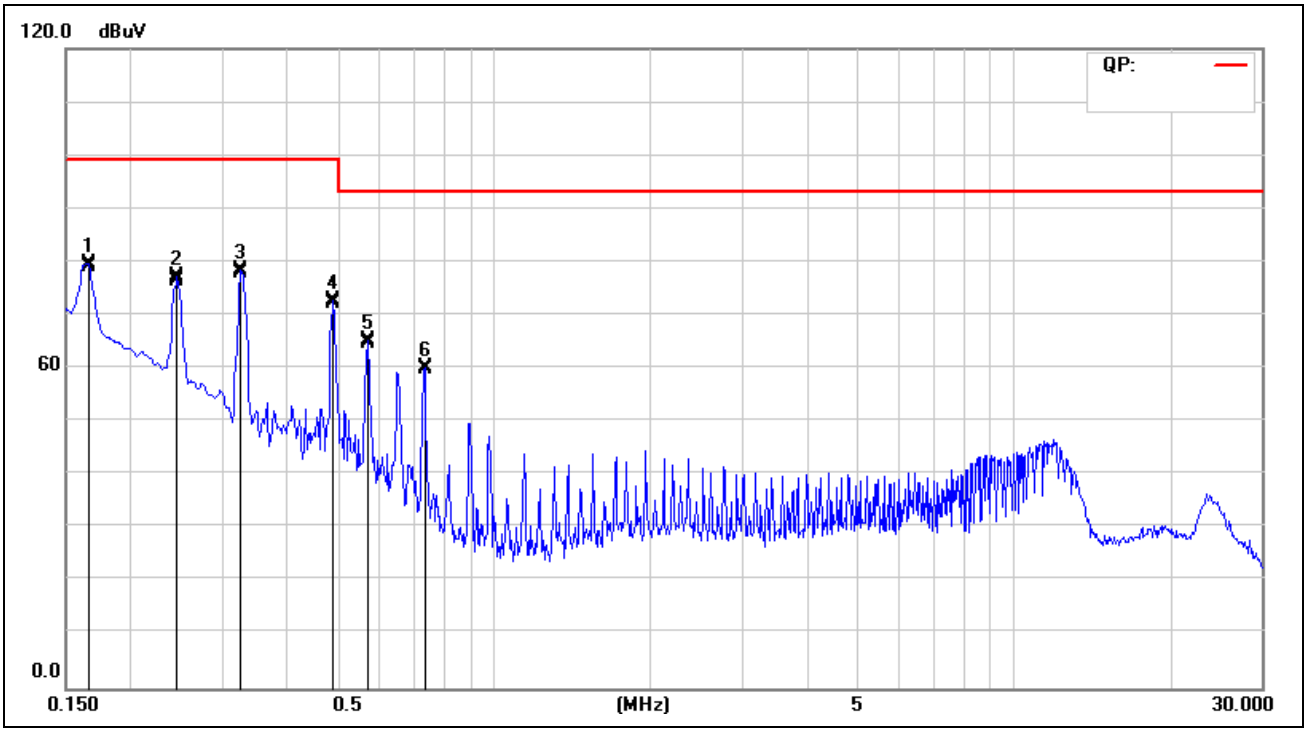
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:31:55
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 24V
Model:	DDR-240B-24	Description:	Mode 2(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1660	69.41		9.98	79.39		99.00		-19.61		Pass
2	0.2460	67.04		9.98	77.02		99.00		-21.98		Pass
3	0.3260	68.18		9.98	78.16		99.00		-20.84		Pass
4*	0.4900	62.39		9.98	72.37		99.00		-26.63		Pass
5	0.5740	54.87		9.99	64.86		93.00		-28.14		Pass
6	0.7380	49.87		10.03	59.90		93.00		-33.10		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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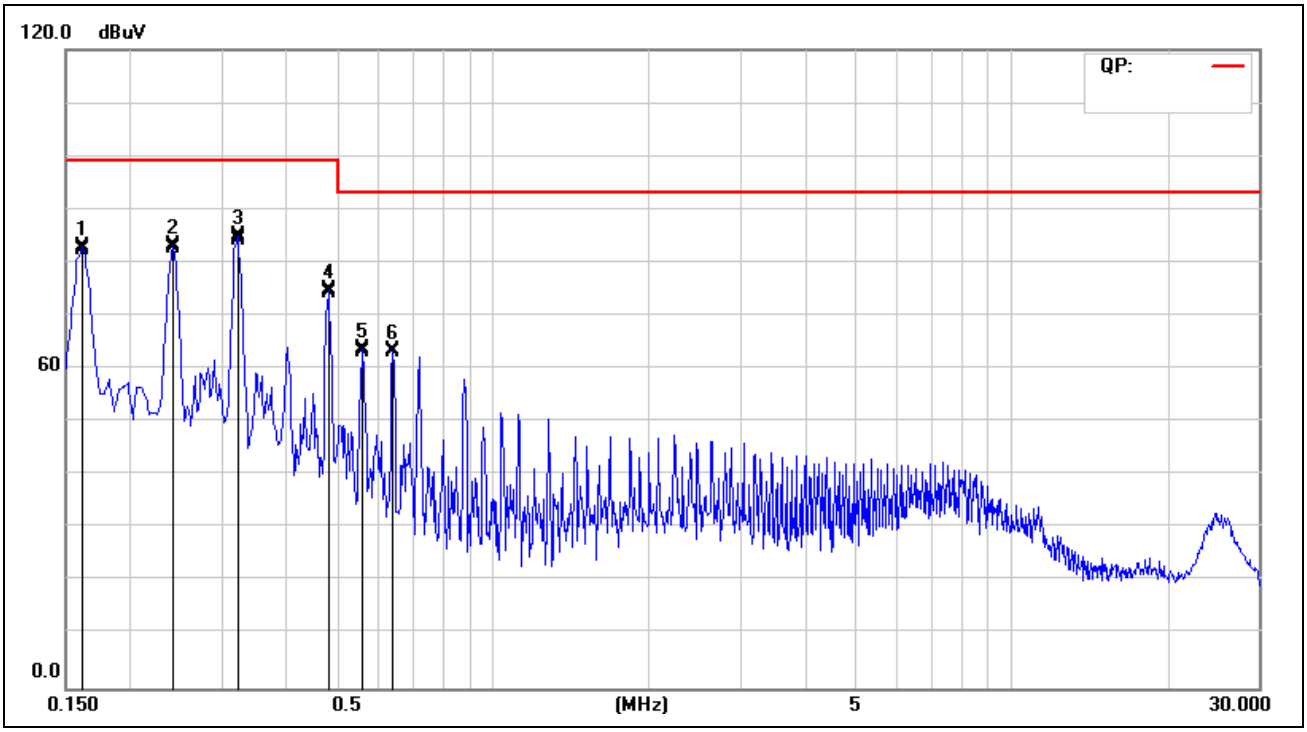
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	18:55:54
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 24V
Model:	DDR-240B-48	Description:	Mode 3(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1620	72.61		9.97	82.58		99.00		-16.42		Pass
2	0.2420	73.06		9.96	83.02		99.00		-15.98		Pass
3	0.3220	74.39		9.97	84.36		99.00		-14.64		Pass
4*	0.4820	64.73		9.97	74.70		99.00		-24.30		Pass
5	0.5620	53.38		9.98	63.36		93.00		-29.64		Pass
6	0.6419	53.21		9.99	63.20		93.00		-29.80		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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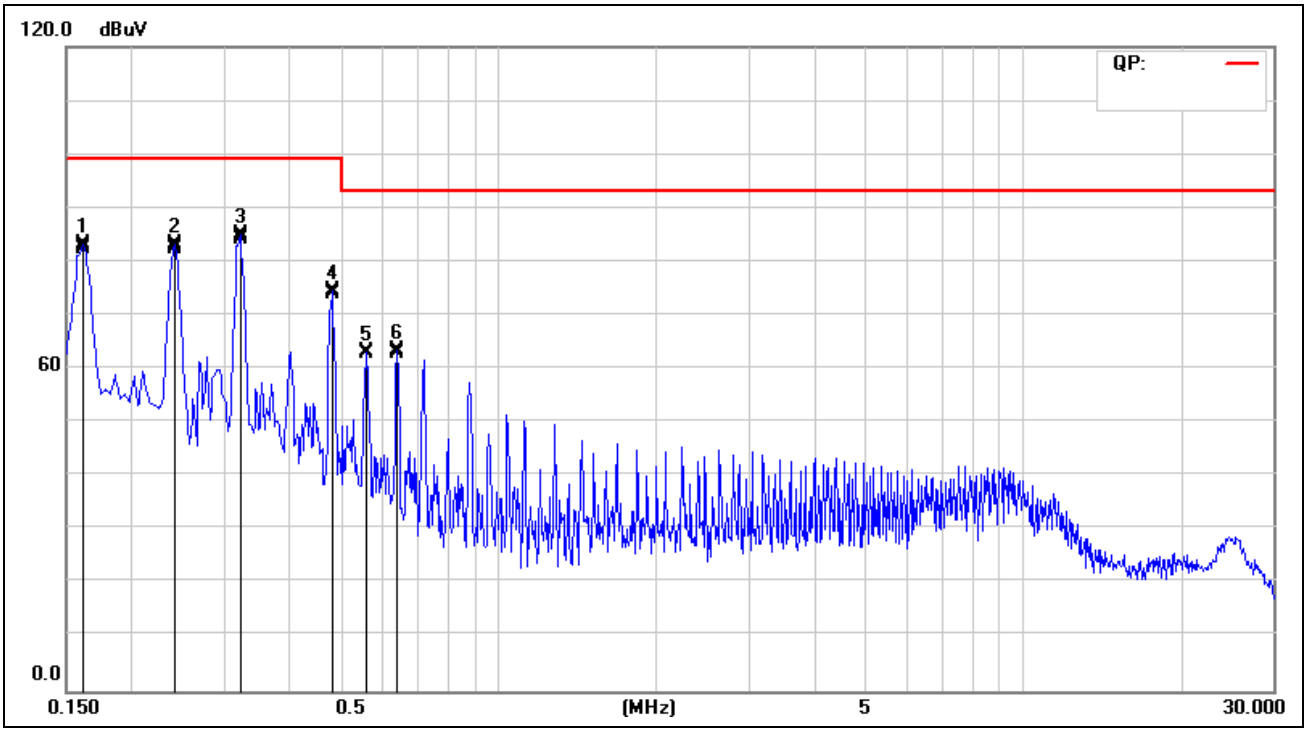
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:01:48
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 24V
Model:	DDR-240B-48	Description:	Mode 3(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1620	72.80		9.98	82.78		99.00		-16.22		Pass
2	0.2420	72.66		9.98	82.64		99.00		-16.36		Pass
3	0.3220	74.47		9.98	84.45		99.00		-14.55		Pass
4*	0.4820	64.29		9.98	74.27		99.00		-24.73		Pass
5	0.5620	53.10		9.99	63.09		93.00		-29.91		Pass
6	0.6419	53.11		10.00	63.11		93.00		-29.89		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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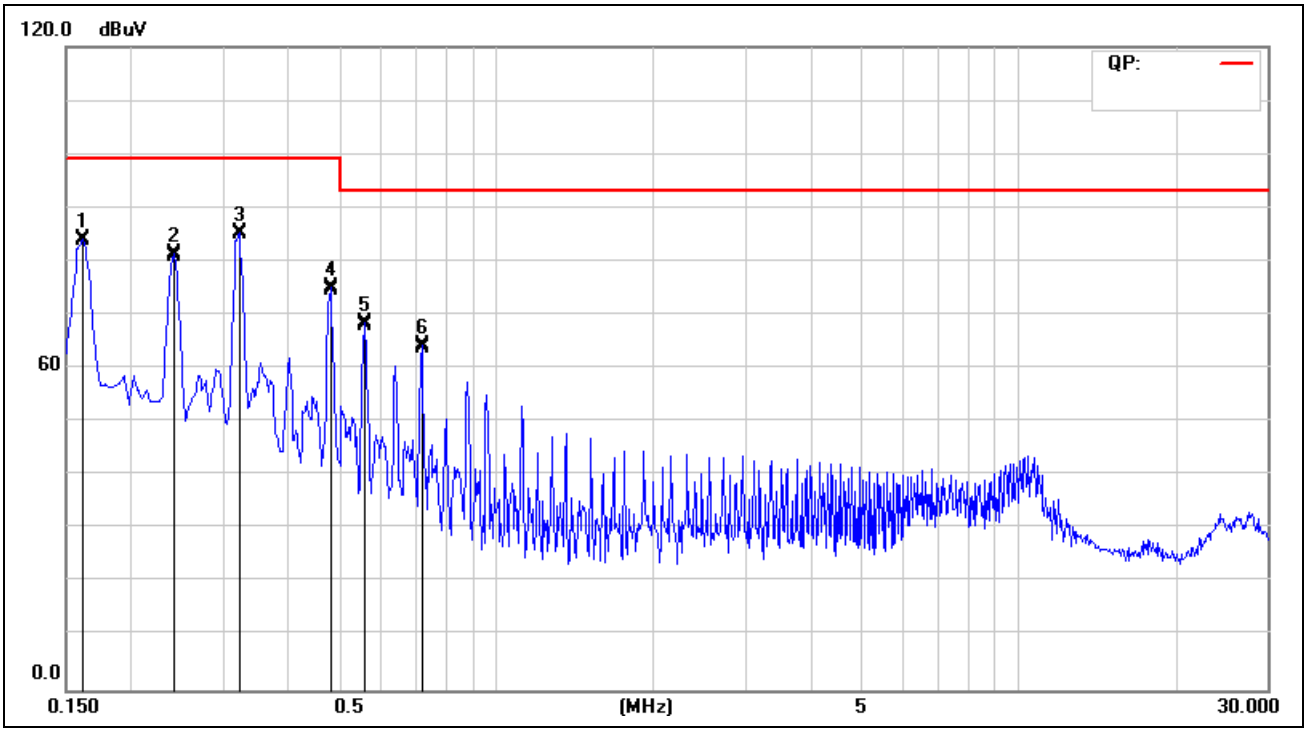
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:12:40
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 24V
Model:	DDR-240B-48	Description:	Mode 4(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1620	74.07		9.97	84.04		99.00		-14.96		Pass
2	0.2420	71.16		9.96	81.12		99.00		-17.88		Pass
3	0.3220	75.34		9.97	85.31		99.00		-13.69		Pass
4	0.4820	64.97		9.97	74.94		99.00		-24.06		Pass
5*	0.5620	58.07		9.98	68.05		93.00		-24.95		Pass
6	0.7220	54.01		10.01	64.02		93.00		-28.98		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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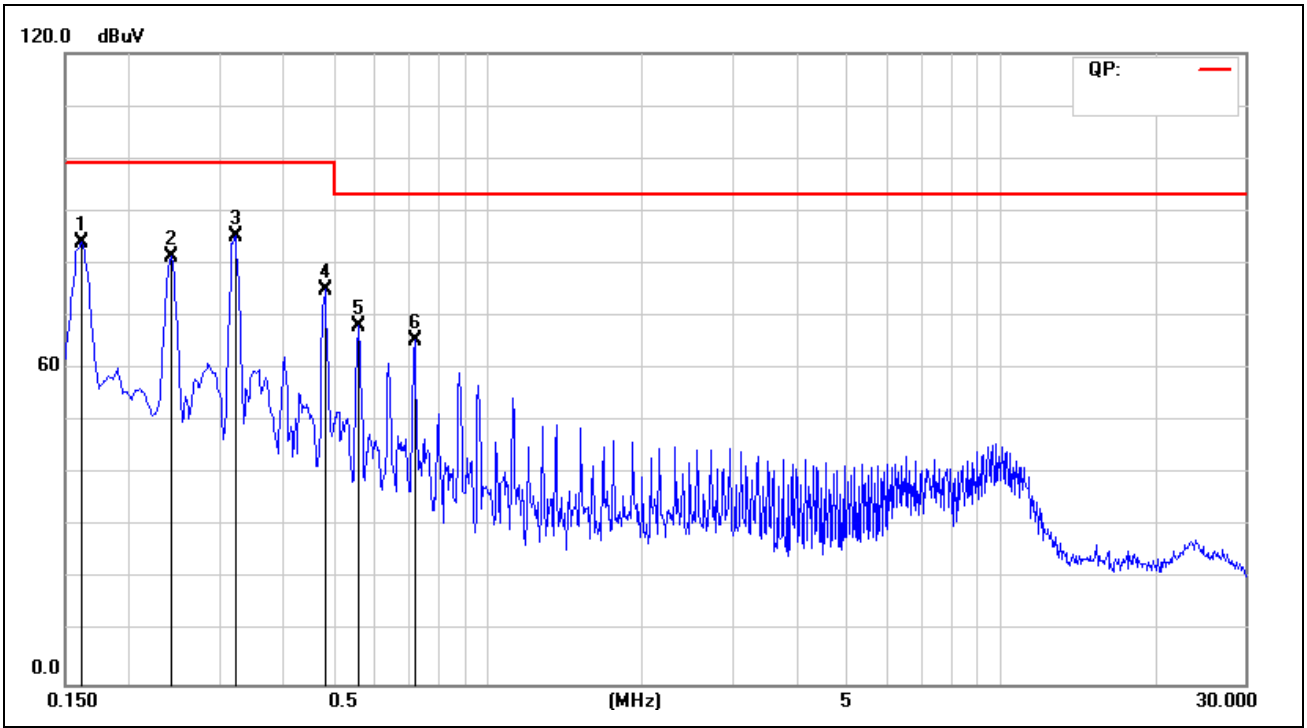
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:06:32
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 24V
Model:	DDR-240B-48	Description:	Mode 4(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1620	73.94		9.98	83.92		99.00		-15.08		Pass
2	0.2420	71.39		9.98	81.37		99.00		-17.63		Pass
3	0.3220	75.42		9.98	85.40		99.00		-13.60		Pass
4	0.4820	65.10		9.98	75.08		99.00		-23.92		Pass
5*	0.5620	58.23		9.99	68.22		93.00		-24.78		Pass
6	0.7220	55.37		10.03	65.40		93.00		-27.60		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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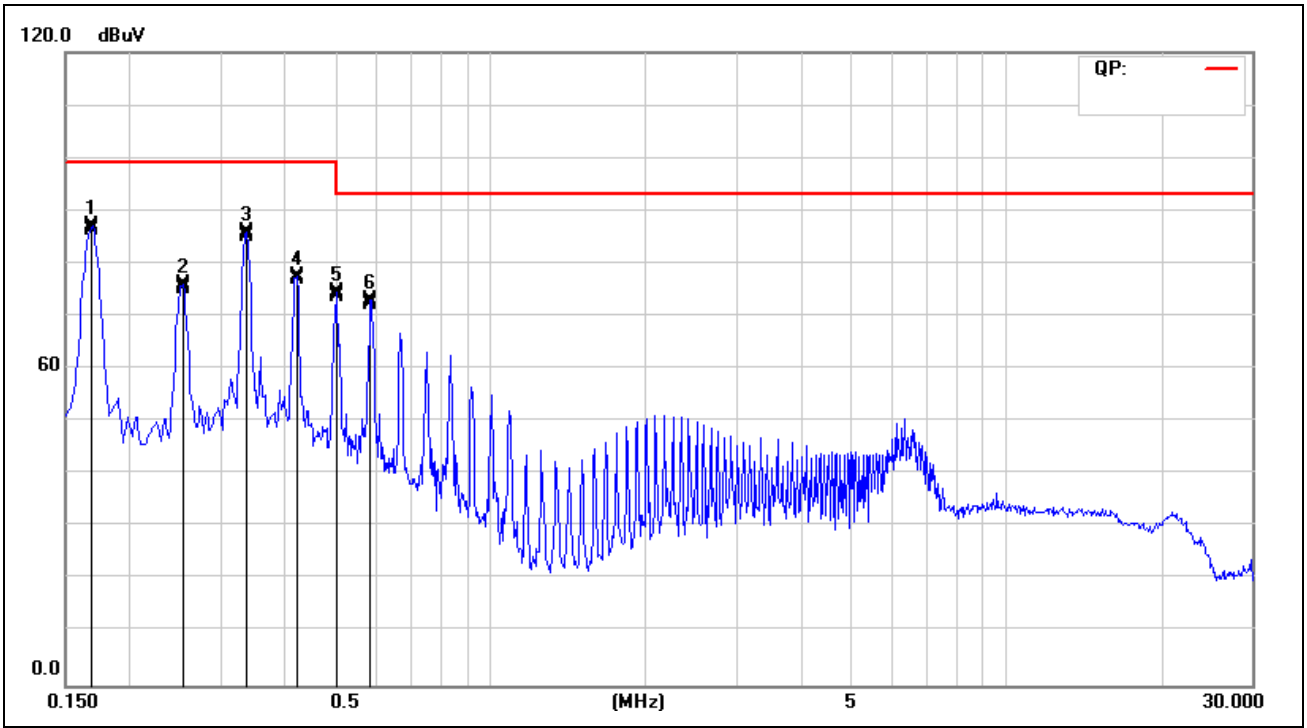
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:56:40
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 48V
Model:	DDR-240C-24	Description:	Mode 5(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1700	76.68		9.97	86.65		99.00		-12.35		Pass
2	0.2540	65.52		9.97	75.49		99.00		-23.51		Pass
3	0.3379	75.79		9.97	85.76		99.00		-13.24		Pass
4*	0.4220	67.30		9.97	77.27		99.00		-21.73		Pass
5	0.5020	64.18		9.97	74.15		93.00		-18.85		Pass
6	0.5860	62.76		9.98	72.74		93.00		-20.26		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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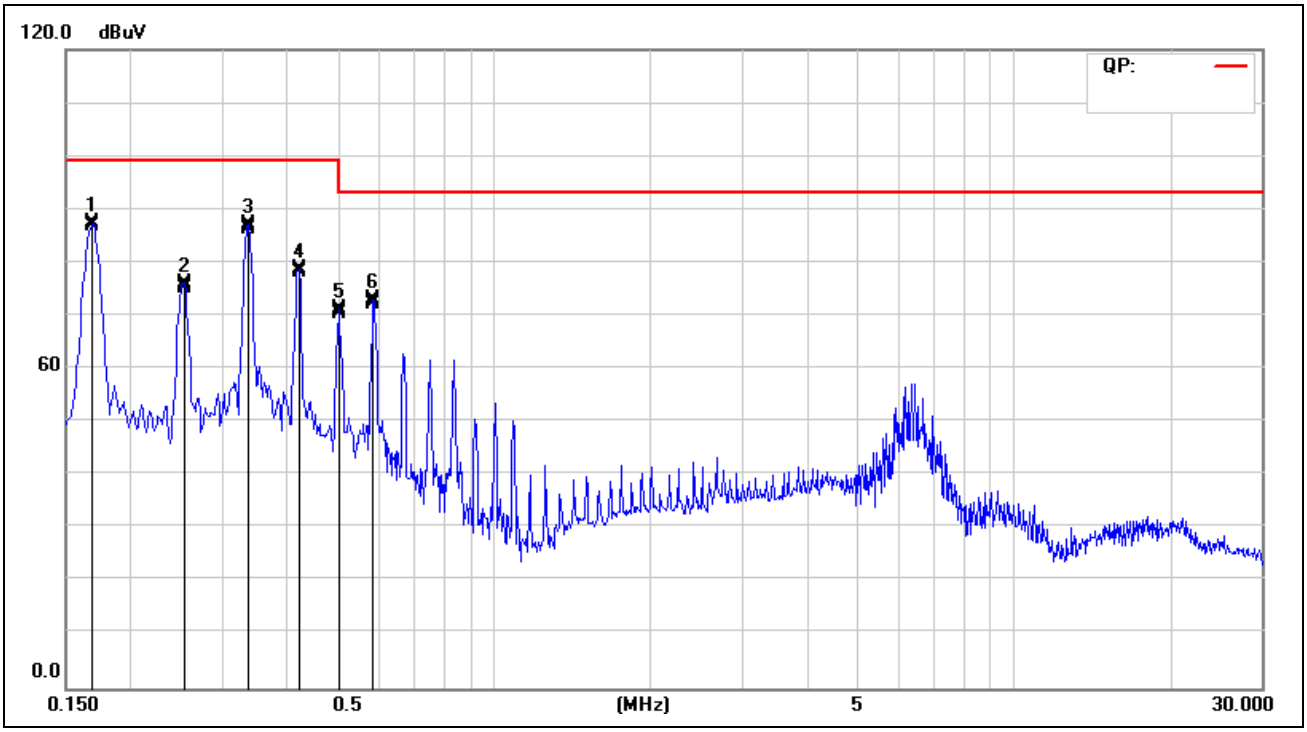
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:51:04
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 48V
Model:	DDR-240C-24	Description:	Mode 5(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1700	77.23		9.98	87.21		99.00		-11.79		Pass
2	0.2540	65.58		9.98	75.56		99.00		-23.44		Pass
3	0.3379	76.90		9.98	86.88		99.00		-12.12		Pass
4	0.4220	68.36		9.98	78.34		99.00		-20.66		Pass
5*	0.5020	60.70		9.98	70.68		93.00		-22.32		Pass
6	0.5860	62.57		9.99	72.56		93.00		-20.44		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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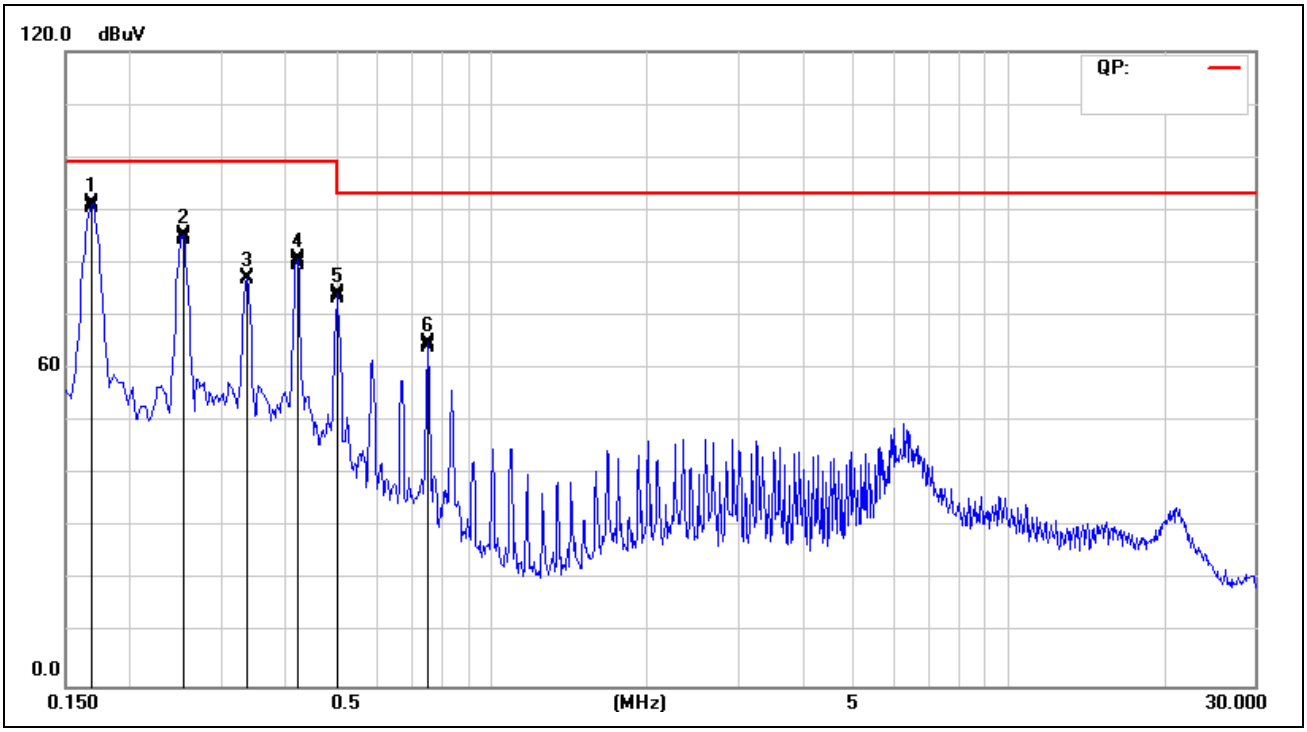
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:41:47
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 48V
Model:	DDR-240C-24	Description:	Mode 6(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1700	80.81		9.97	90.78		99.00		-8.22		Pass
2	0.2540	74.89		9.97	84.86		99.00		-14.14		Pass
3	0.3379	66.97		9.97	76.94		99.00		-22.06		Pass
4	0.4220	70.26		9.97	80.23		99.00		-18.77		Pass
5*	0.5060	63.79		9.97	73.76		93.00		-19.24		Pass
6	0.7580	54.39		10.02	64.41		93.00		-28.59		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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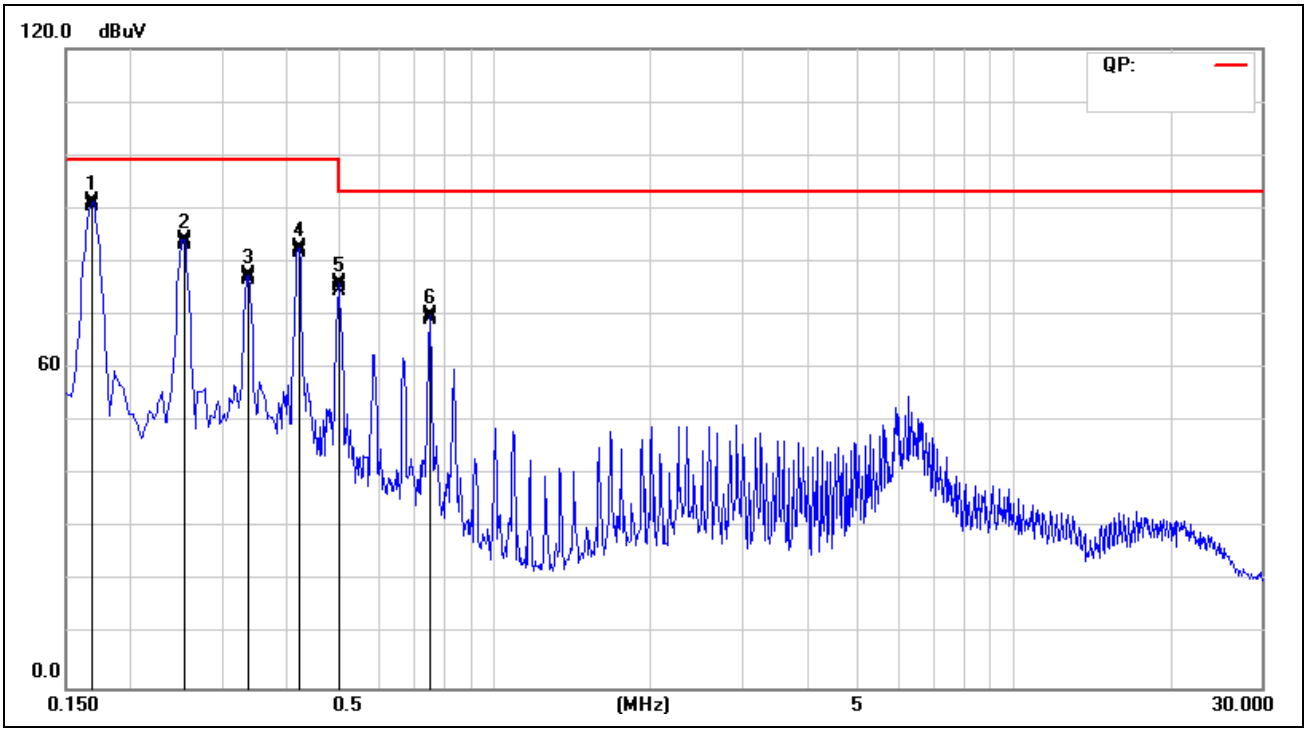
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	19:46:06
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 48V
Model:	DDR-240C-24	Description:	Mode 6(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1700	80.67		9.98	90.65		99.00		-8.35		Pass
2	0.2540	73.78		9.98	83.76		99.00		-15.24		Pass
3	0.3379	67.17		9.98	77.15		99.00		-21.85		Pass
4	0.4220	72.28		9.98	82.26		99.00		-16.74		Pass
5*	0.5020	65.41		9.98	75.39		93.00		-17.61		Pass
6	0.7539	59.43		10.04	69.47		93.00		-23.53		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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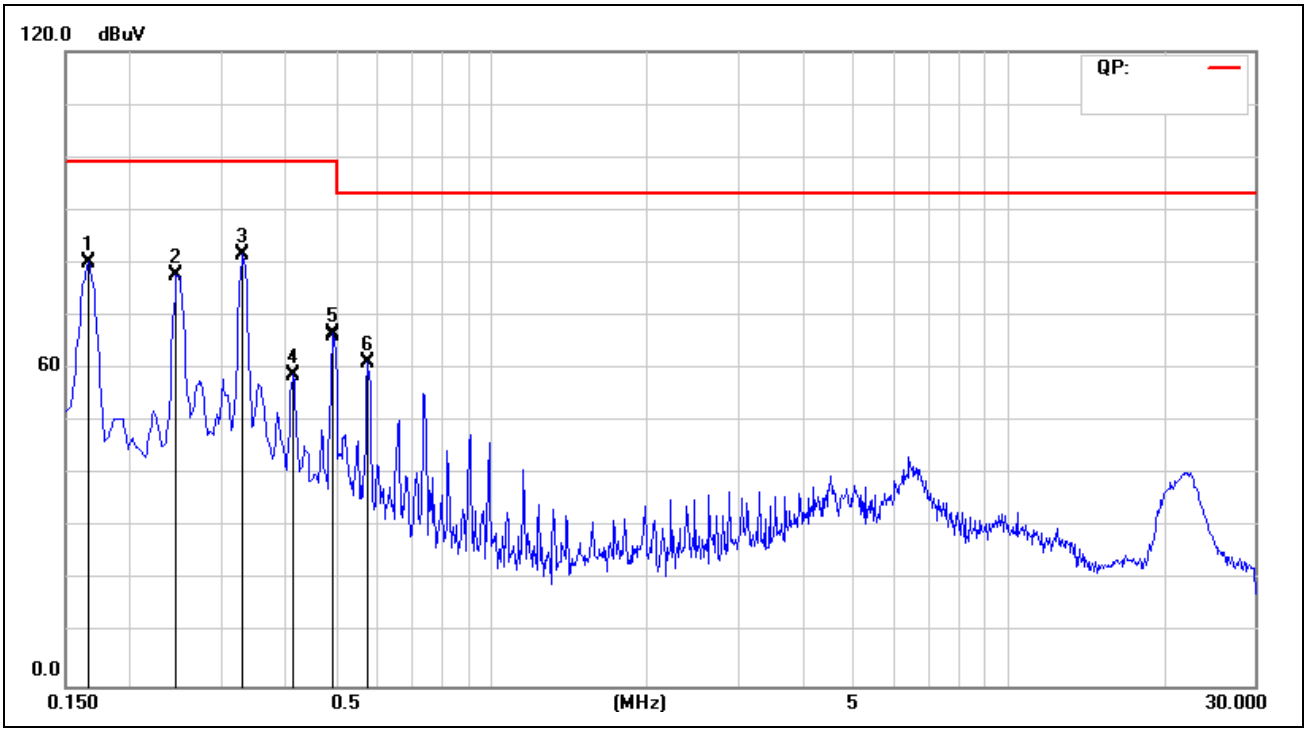
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	18:46:55
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 48V
Model:	DDR-240C-48	Description:	Mode 7(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1660	70.23		9.97	80.20		99.00		-18.80		Pass
2	0.2460	67.67		9.96	77.63		99.00		-21.37		Pass
3	0.3300	71.73		9.97	81.70		99.00		-17.30		Pass
4*	0.4140	48.81		9.97	58.78		99.00		-40.22		Pass
5	0.4940	56.47		9.97	66.44		99.00		-32.56		Pass
6	0.5780	51.26		9.98	61.24		93.00		-31.76		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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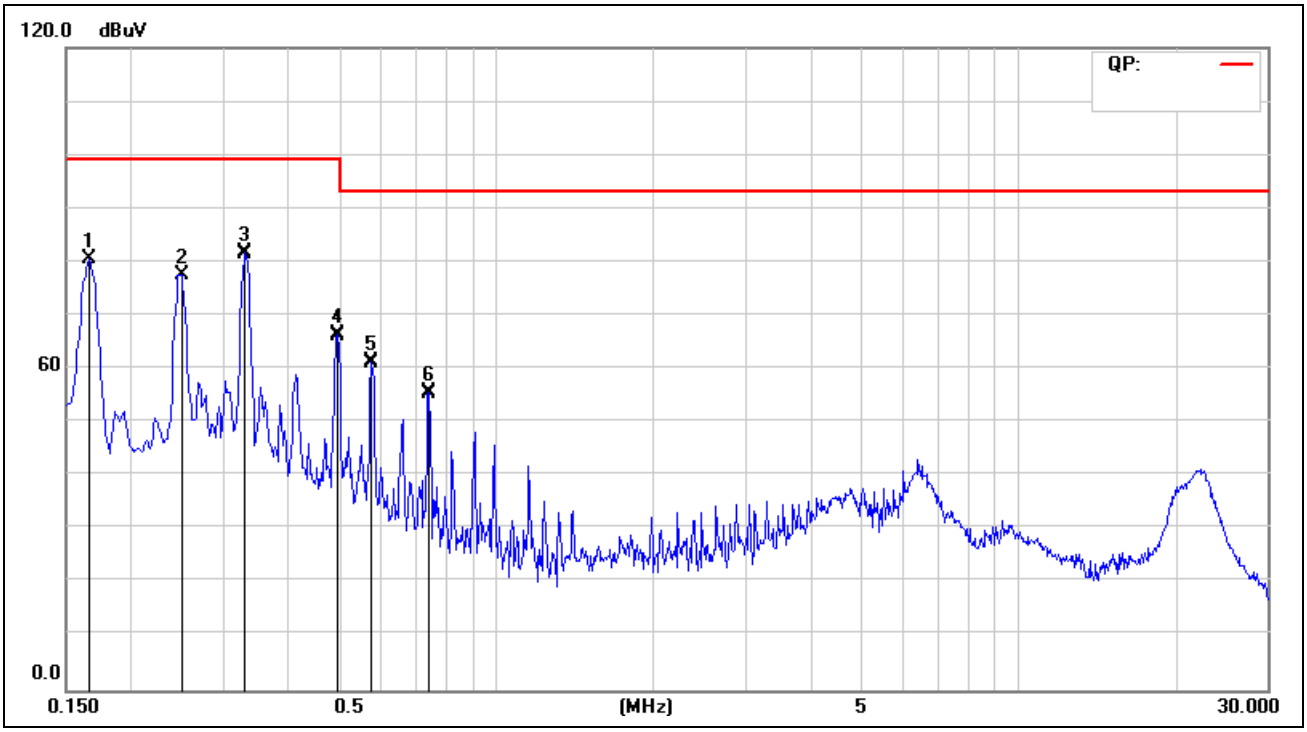
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	18:41:48
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 48V
Model:	DDR-240C-48	Description:	Mode 7(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1660	70.54		9.98	80.52		99.00		-18.48		Pass
2	0.2500	67.59		9.98	77.57		99.00		-21.43		Pass
3	0.3300	71.66		9.98	81.64		99.00		-17.36		Pass
4*	0.4980	56.22		9.98	66.20		99.00		-32.80		Pass
5	0.5780	51.16		9.99	61.15		93.00		-31.85		Pass
6	0.7460	45.34		10.03	55.37		93.00		-37.63		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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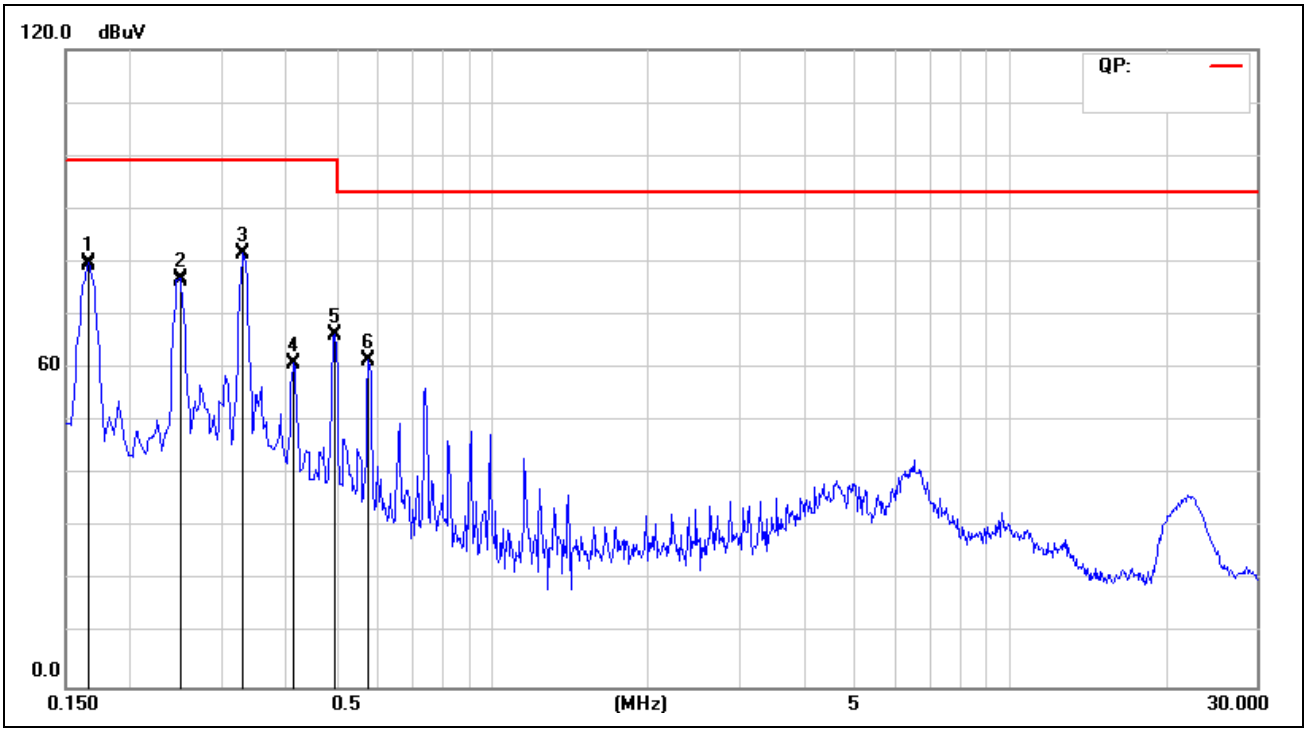
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	18:30:12
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 48V
Model:	DDR-240C-48	Description:	Mode 8(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1660	69.49		9.97	79.46		99.00		-19.54		Pass
2	0.2500	66.56		9.97	76.53		99.00		-22.47		Pass
3	0.3300	71.78		9.97	81.75		99.00		-17.25		Pass
4*	0.4140	50.82		9.97	60.79		99.00		-38.21		Pass
5	0.4980	56.32		9.97	66.29		99.00		-32.71		Pass
6	0.5780	51.57		9.98	61.55		93.00		-31.45		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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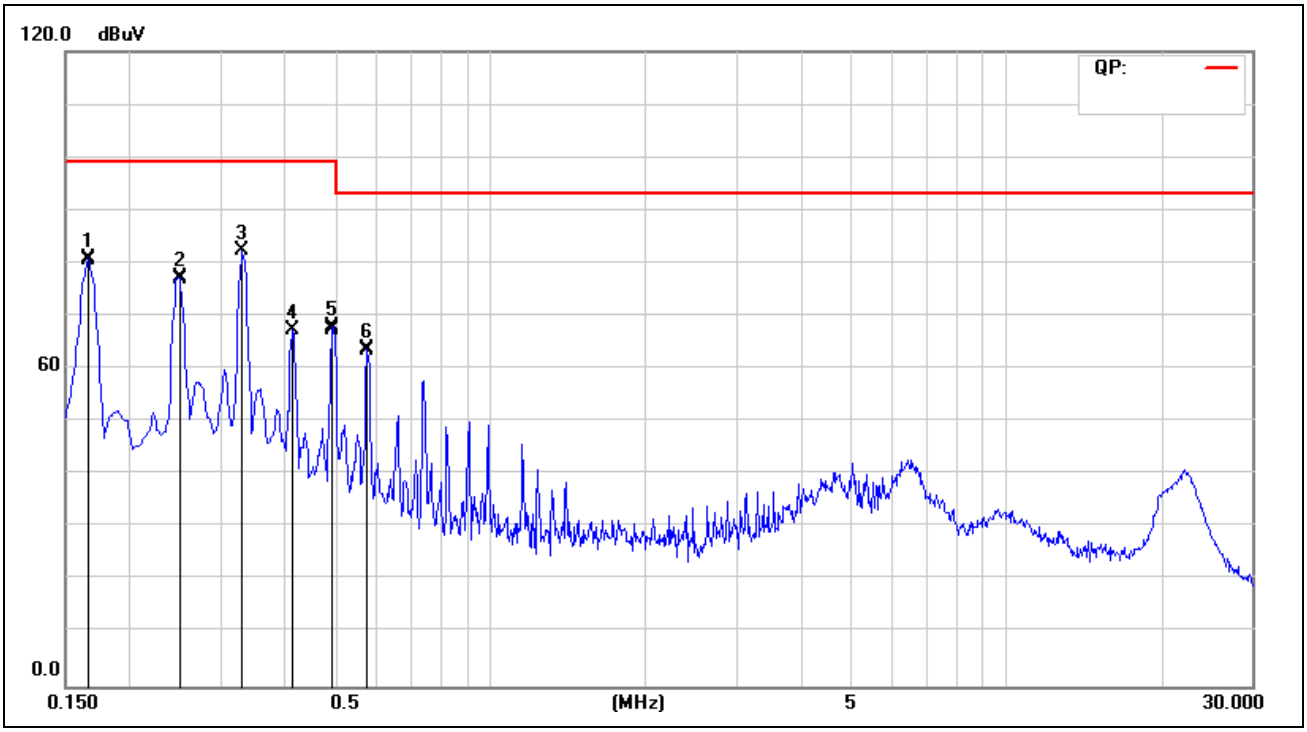
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	18:35:00
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 48V
Model:	DDR-240C-48	Description:	Mode 8(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1660	70.69		9.98	80.67		99.00		-18.33		Pass
2	0.2500	67.13		9.98	77.11		99.00		-21.89		Pass
3	0.3300	72.41		9.98	82.39		99.00		-16.61		Pass
4	0.4140	57.43		9.98	67.41		99.00		-31.59		Pass
5	0.4940	57.91		9.98	67.89		99.00		-31.11		Pass
6*	0.5780	53.47		9.99	63.46		93.00		-29.54		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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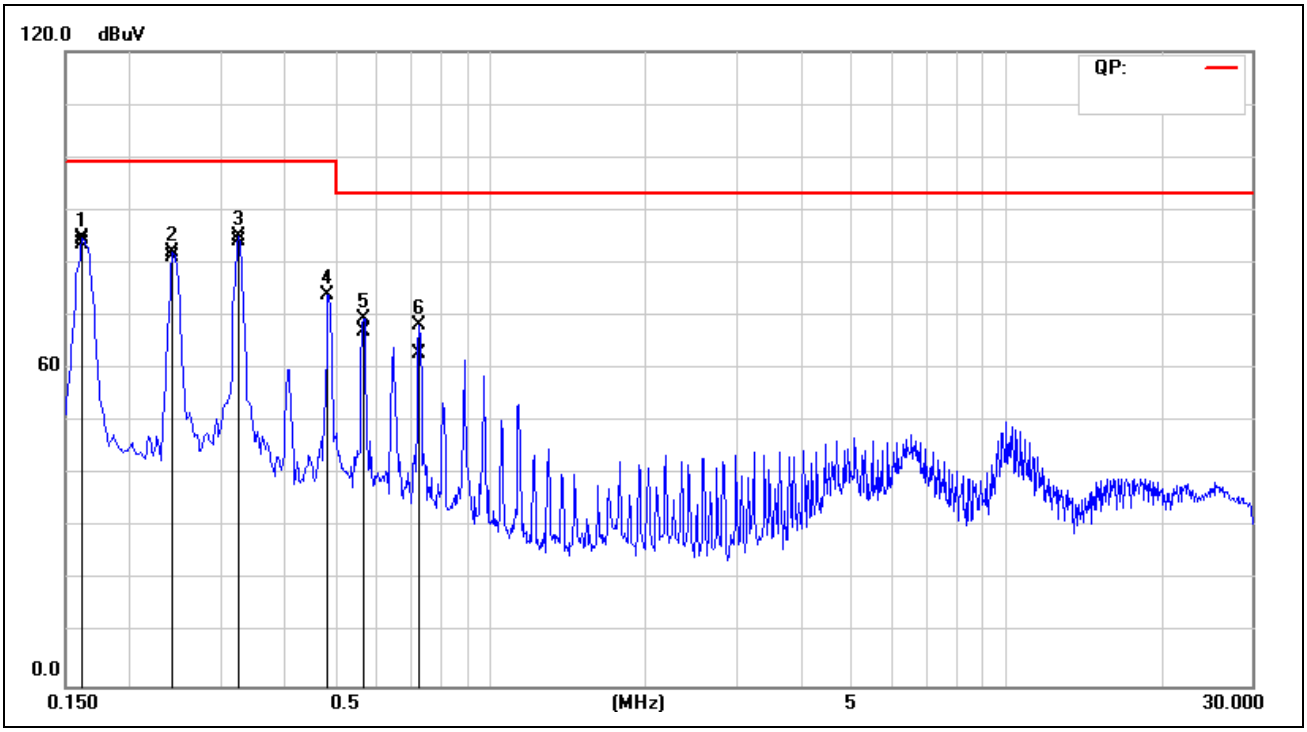
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	17:20:17
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 110V
Model:	DDR-240D-24	Description:	Mode 9(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1615	74.49		9.97	84.46		99.00		-14.54		Pass
2	0.2432	72.02		9.96	81.98		99.00		-17.02		Pass
3	0.3243	75.02		9.97	84.99		99.00		-14.01		Pass
4	0.4864	64.08		9.97	74.05		99.00		-24.95		Pass
5	0.5673	57.21		9.98	67.19		93.00		-25.81		Pass
6	0.7290	52.98		10.02	63.00		93.00		-30.00		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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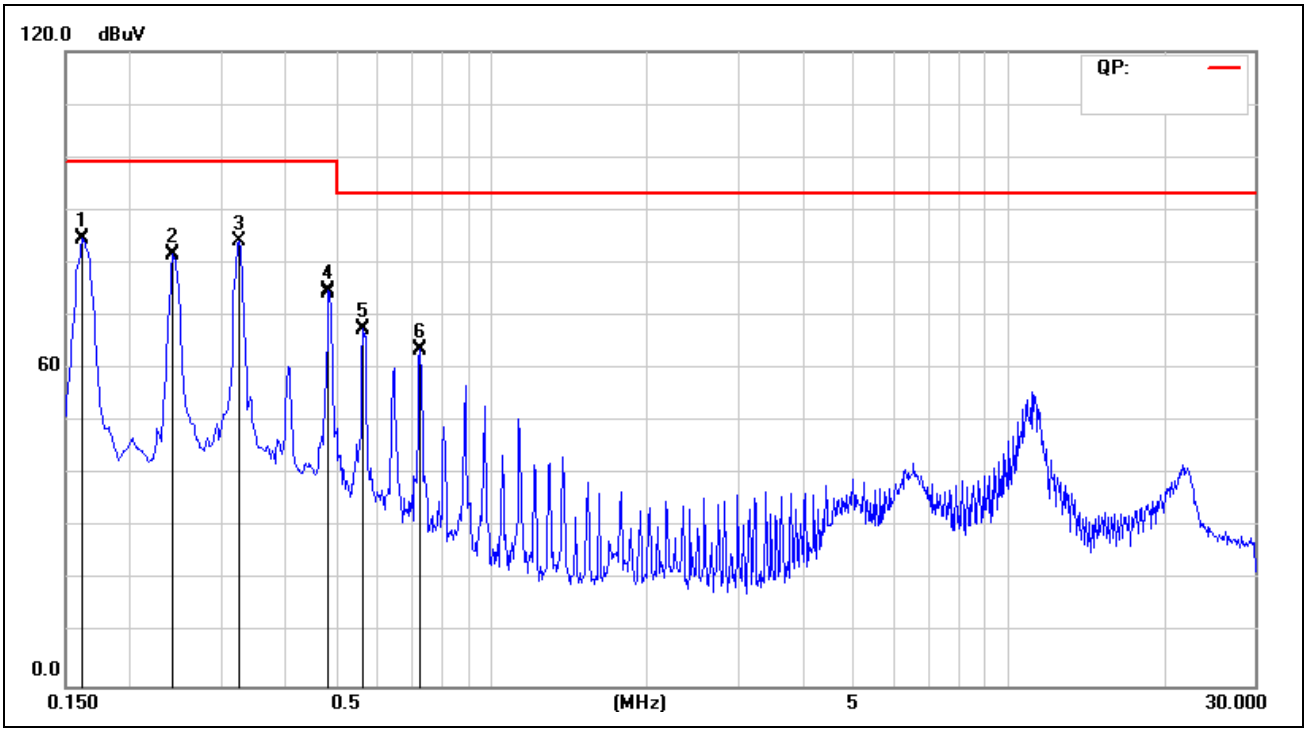
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	17:26:42
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 110V
Model:	DDR-240D-24	Description:	Mode 9(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1620	74.65		9.98	84.63		99.00		-14.37		Pass
2	0.2420	71.67		9.98	81.65		99.00		-17.35		Pass
3	0.3260	74.26		9.98	84.24		99.00		-14.76		Pass
4*	0.4860	64.75		9.98	74.73		99.00		-24.27		Pass
5	0.5660	57.70		9.99	67.69		93.00		-25.31		Pass
6	0.7300	53.83		10.03	63.86		93.00		-29.14		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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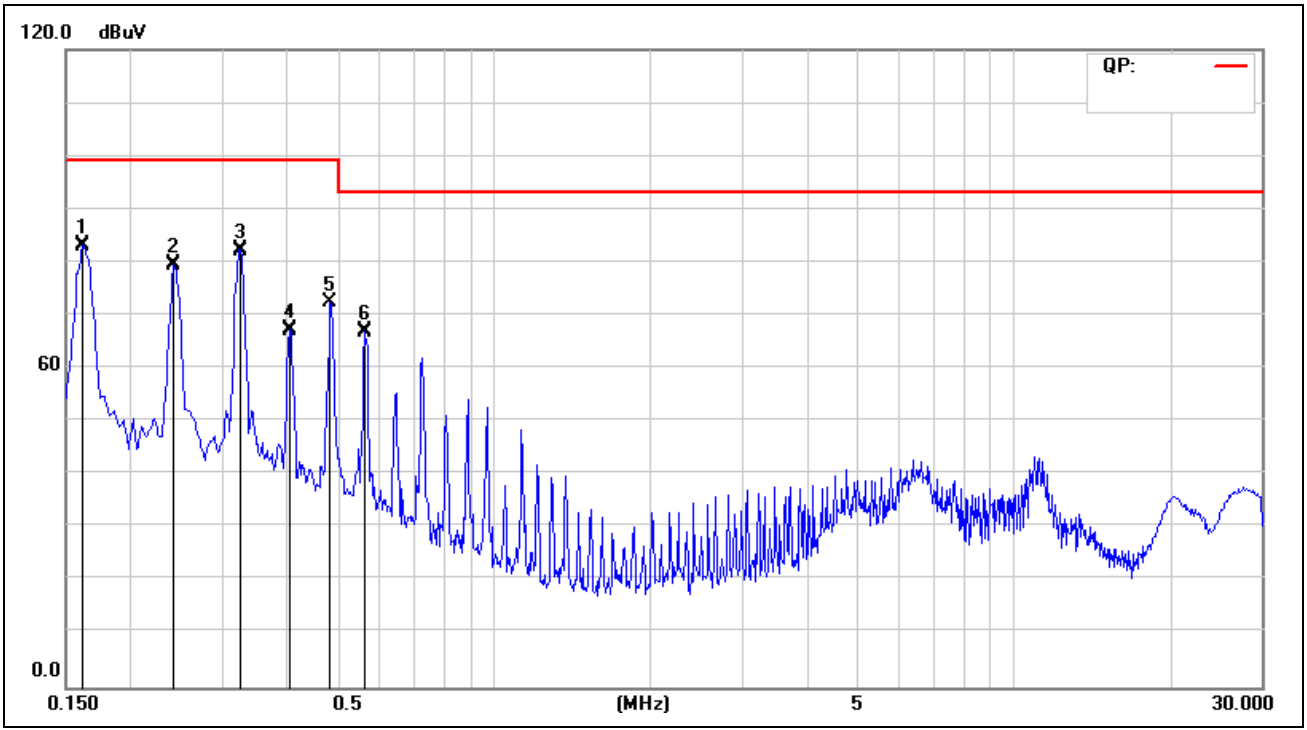
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	17:39:10
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 110V
Model:	DDR-240D-24	Description:	Mode 10(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1620	73.15		9.97	83.12		99.00		-15.88		Pass
2	0.2420	69.50		9.96	79.46		99.00		-19.54		Pass
3*	0.3260	72.40		9.97	82.37		99.00		-16.63		Pass
4	0.4060	57.22		9.97	67.19		99.00		-31.81		Pass
5	0.4860	62.43		9.97	72.40		99.00		-26.60		Pass
6	0.5660	56.85		9.98	66.83		93.00		-26.17		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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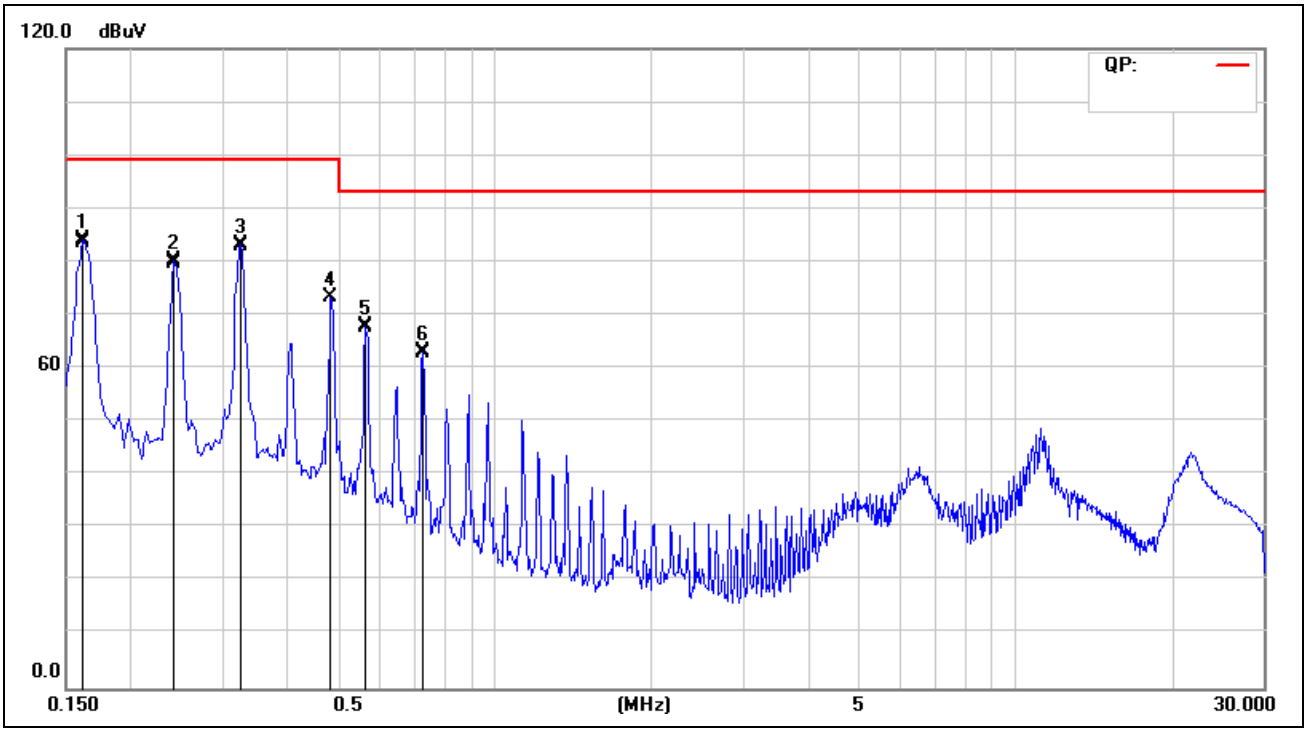
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	17:34:51
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 110V
Model:	DDR-240D-24	Description:	Mode 10(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1620	74.03		9.98	84.01		99.00		-14.99		Pass
2	0.2420	70.07		9.98	80.05		99.00		-18.95		Pass
3	0.3260	73.22		9.98	83.20		99.00		-15.80		Pass
4	0.4860	63.44		9.98	73.42		99.00		-25.58		Pass
5	0.5660	57.84		9.99	67.83		93.00		-25.17		Pass
6	0.7300	53.12		10.03	63.15		93.00		-29.85		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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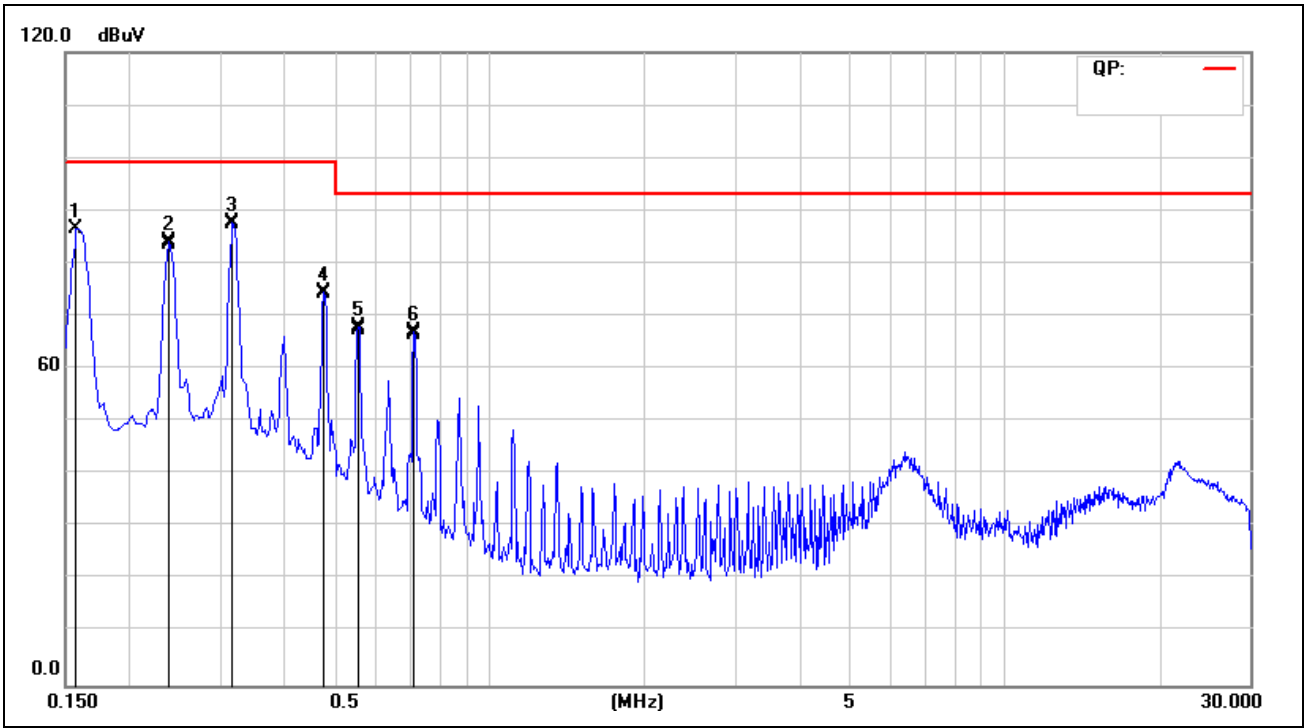
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	17:46:22
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 110V
Model:	DDR-240D-48	Description:	Mode 11(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1580	76.53		9.97	86.50		99.00		-12.50		Pass
2	0.2380	73.79		9.96	83.75		99.00		-15.25		Pass
3	0.3180	77.80		9.97	87.77		99.00		-11.23		Pass
4*	0.4780	64.35		9.97	74.32		99.00		-24.68		Pass
5	0.5580	57.68		9.98	67.66		93.00		-25.34		Pass
6	0.7140	57.05		10.01	67.06		93.00		-25.94		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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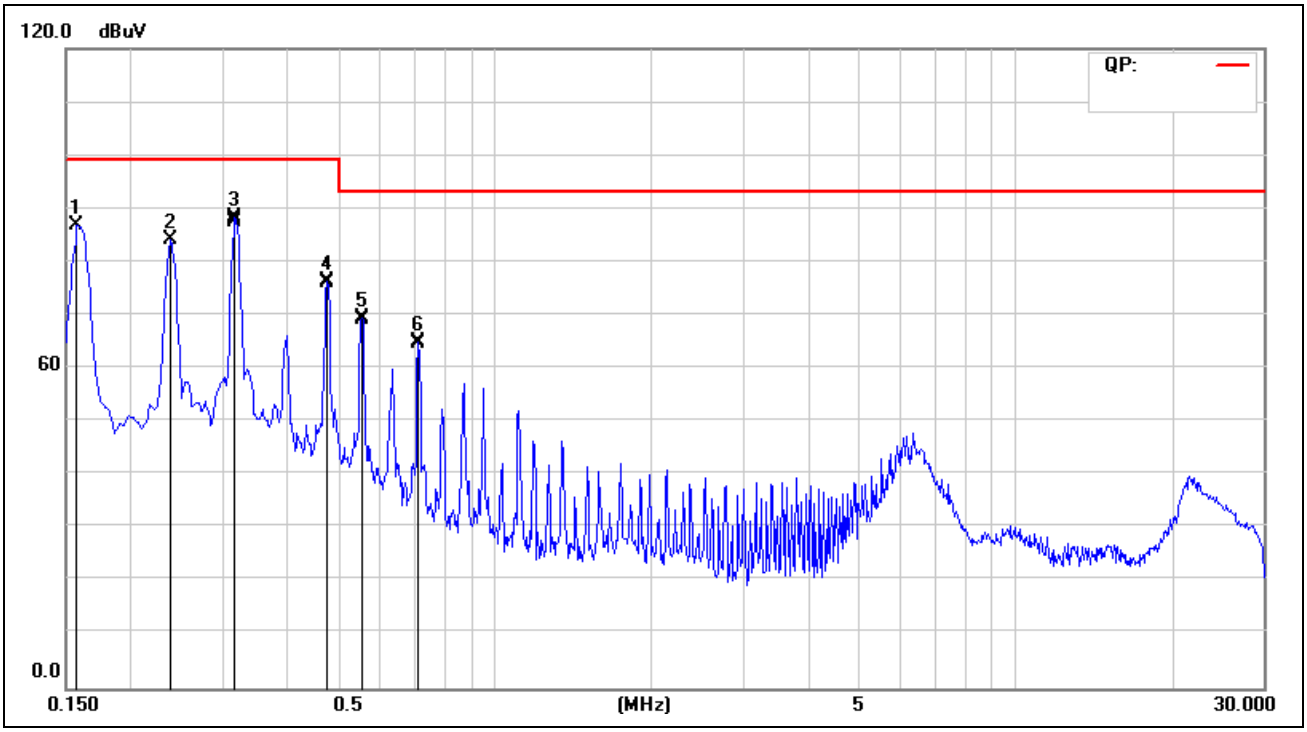
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	17:52:12
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 110V
Model:	DDR-240D-48	Description:	Mode 11(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1580	76.85		9.98	86.83		99.00		-12.17		Pass
2	0.2380	74.16		9.98	84.14		99.00		-14.86		Pass
3	0.3180	77.97		9.98	87.95		99.00		-11.05		Pass
4*	0.4780	66.23		9.98	76.21		99.00		-22.79		Pass
5	0.5580	59.31		9.99	69.30		93.00		-23.70		Pass
6	0.7140	54.78		10.02	64.80		93.00		-28.20		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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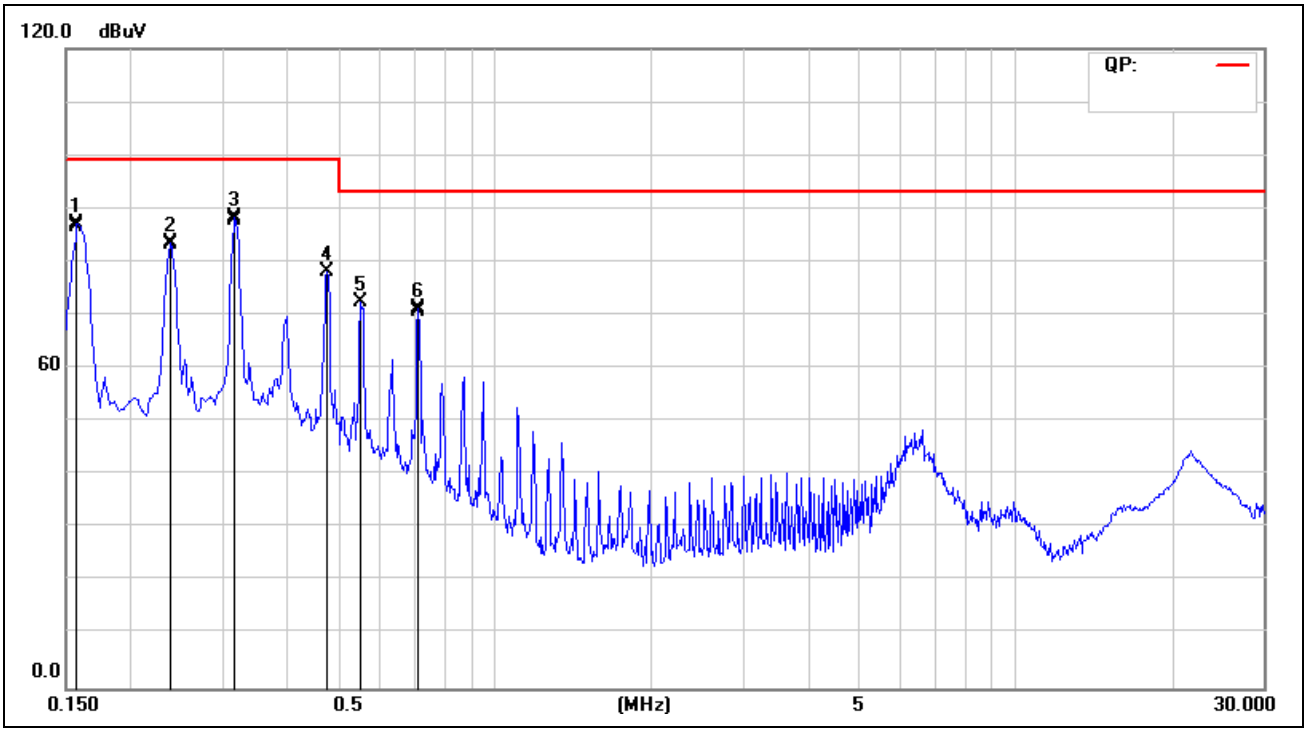
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	18:05:38
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L1	Test Voltage:	DC 110V
Model:	DDR-240D-48	Description:	Mode 12(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1580	76.78		9.97	86.75		99.00		-12.25		Pass
2	0.2380	73.54		9.96	83.50		99.00		-15.50		Pass
3	0.3180	77.96		9.97	87.93		99.00		-11.07		Pass
4	0.4780	68.19		9.97	78.16		99.00		-20.84		Pass
5*	0.5540	62.49		9.98	72.47		93.00		-20.53		Pass
6	0.7140	60.87		10.01	70.88		93.00		-22.12		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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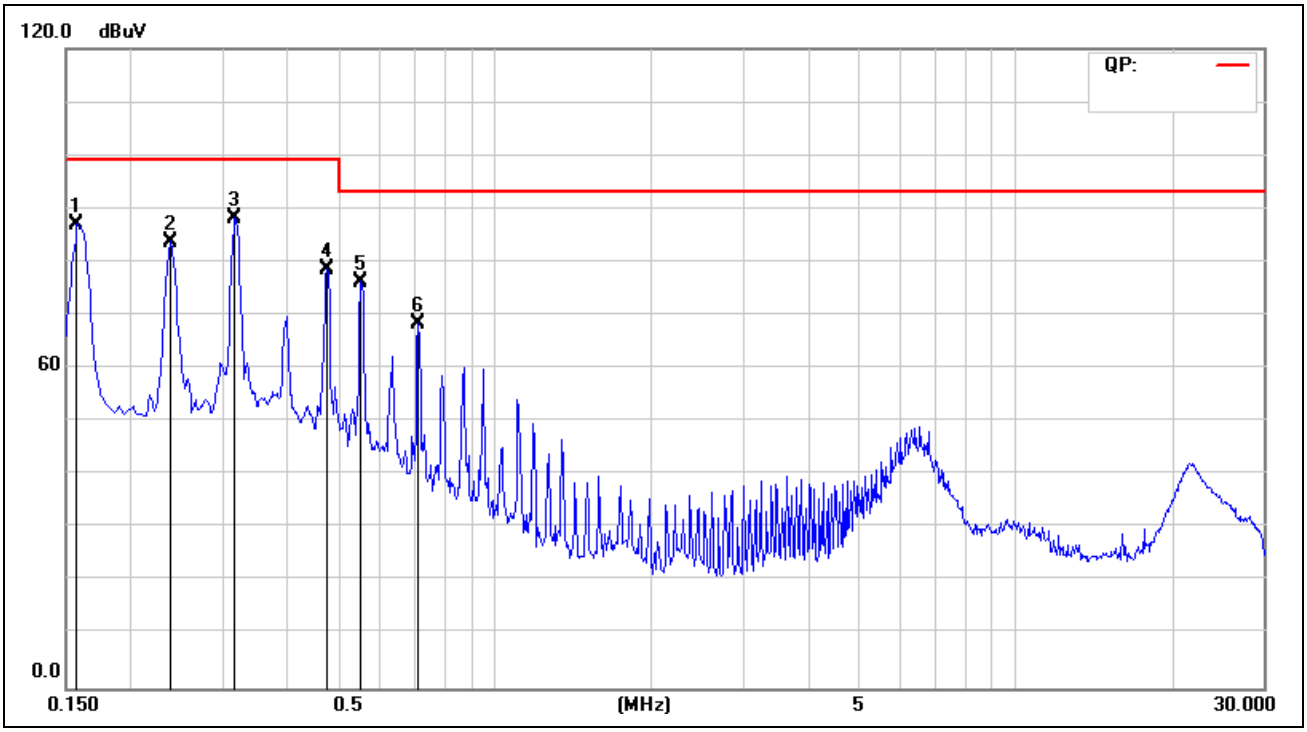
Job No.:	C180611E01	Date:	2018/6/24
Company:	MEAN WELL	Time:	17:57:01
Standard:	EN50121-3-2 Conduction	Temp.(C)/Hum.(%):	22(C)/41%
Test item:	Conduction test	Test By:	Osmond.Chen
Line:	L2	Test Voltage:	DC 110V
Model:	DDR-240D-48	Description:	Mode 12(Output)



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1580	77.11		9.98	87.09		99.00		-11.91		Pass
2	0.2380	73.69		9.98	83.67		99.00		-15.33		Pass
3	0.3180	78.27		9.98	88.25		99.00		-10.75		Pass
4	0.4780	68.72		9.98	78.70		99.00		-20.30		Pass
5*	0.5540	66.25		9.99	76.24		93.00		-16.76		Pass
6	0.7140	58.41		10.02	68.43		93.00		-24.57		Pass

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

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6.2. RADIATED EMISSION MEASUREMENT

6.2.1. LIMITS

Below 1GHz

FREQUENCY (MHz)	dBuV/m (At 10m)	
	Class A	Class B
30 ~ 230	40	30
230 ~ 1000	47	37

6.2.2. TEST INSTRUMENTS

.

Radiated Emission (Test Site Anechoic Chamber (10m chamber))					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI	100002	02/26/2018	02/25/2019
EMI Test Receiver	R&S	ESCI	101379	12/27/2017	12/26/2018
Bilog Antenna	Sunol	JB1	A110204-1	11/05/2017	11/04/2018
Bilog Antenna	Sunol	JB1	A110204-2	05/26/2018	05/25/2019
Pre-Amplifier	Anritsu	MH648A	M64192	12/27/2017	12/26/2018
Pre-Amplifier	Mini-circuits	ZFL-1000VH2	070306	12/27/2017	12/26/2018
Test Software	EZ-EMC ver.3A1				

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2.N.C.R = No Calibration Required.

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6.2.3. TEST PROCEDURE

Procedure of Preliminary Test

The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a FRP turntable(Below 1GHz) with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor standing equipment, it is placed on the ground plane which has a 15 cm non-conductive covering to insulate the EUT from the ground plane.

Support equipment, if needed, was placed as per EN 55011.

All I/O cables were positioned to simulate typical usage as per EN 55011.

The EUT received AC power source from the outlet socket under the turntable. All support equipment power received from another socket under the turntable.

The antenna was placed at 3 or 10 meter away from the EUT as stated in EN 55011. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The test mode(s) described in Item 4.1 were scanned during the preliminary test:

After the preliminary scan, we found the test mode described in Item 4.1 producing the highest emission level.

The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

Procedure of Final Test

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.

The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. Below 1GHz the Q.P. reading and above 1GHz the Peak and Average reading are presented.

The test data of the worst-case condition(s) was recorded.

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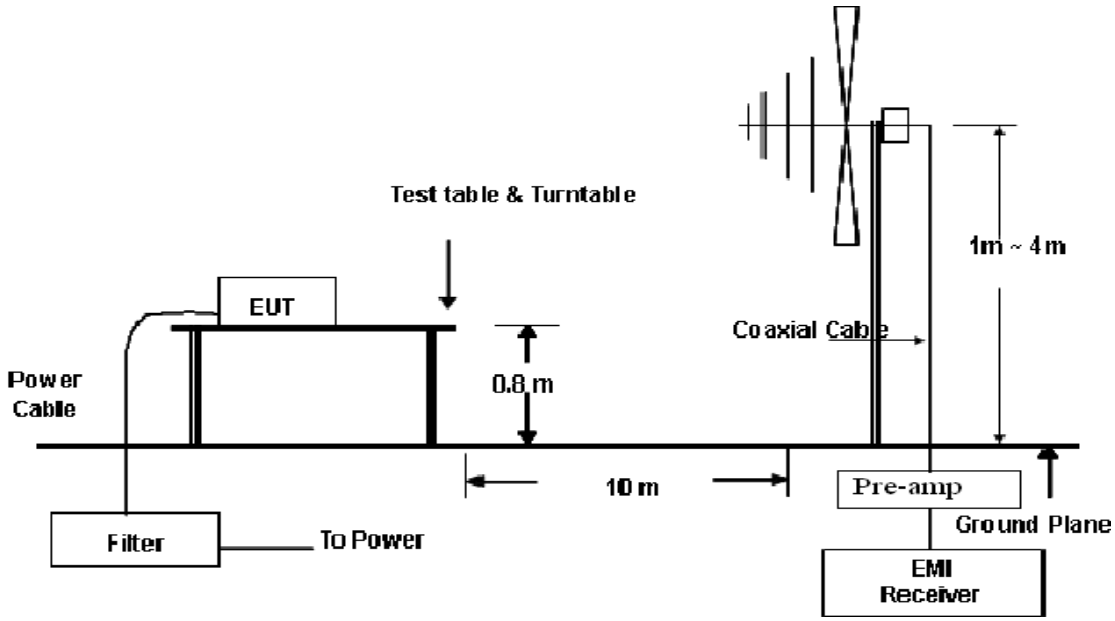
6.2.4. TEST SETUP

Below 1GHz



6.2.5. DATA SAMPLE

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
XX.X.XXX	41.74	-8.38	33.36	30.00	3.36	100	160	peak

Freq. = Emission frequency in MHz
Reading = Uncorrected Analyzer/Receiver reading
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain
Result = Reading + Factor
Limit = Limit stated in standard
Margin = Reading in reference to limit
Height = Height of antenna
Degree = Position of turn table
Remark = Information of value (Peak/ QuasiPeak/Average)

Calculation Formula

Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

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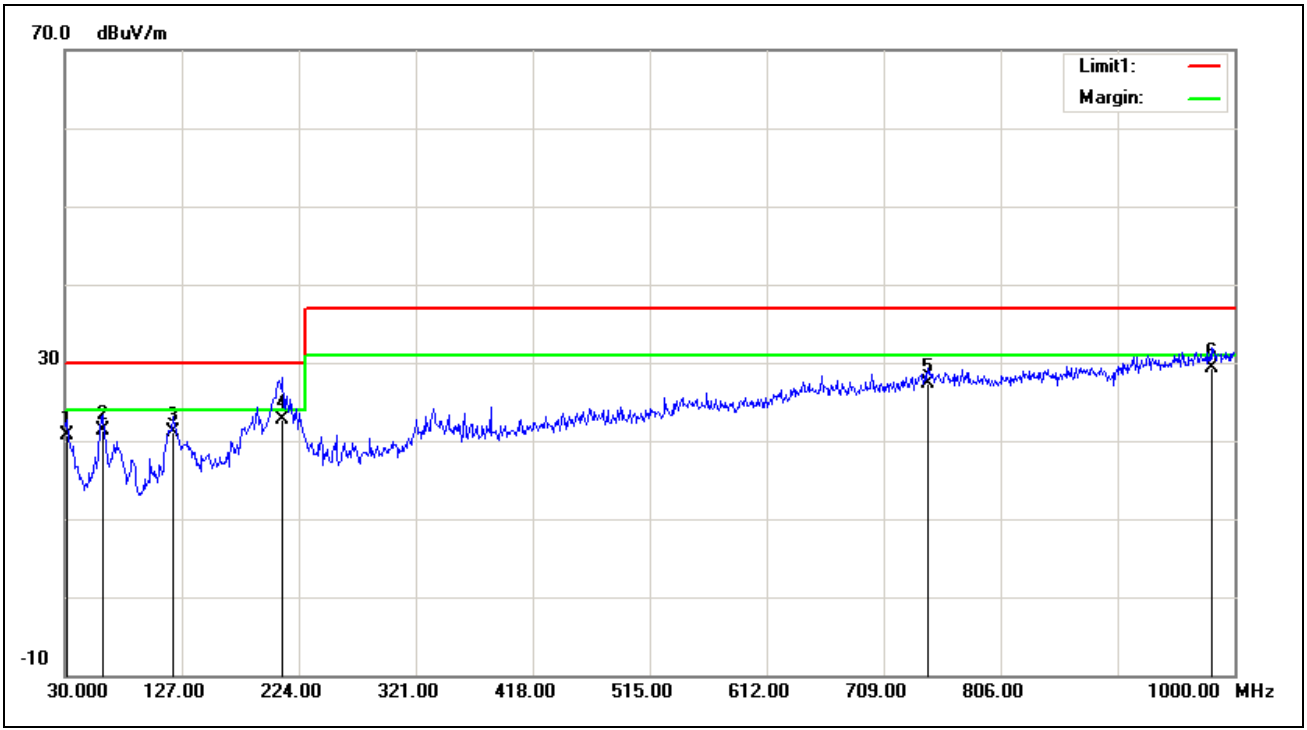
6.2.6. TEST RESULTS

Below 1GHz

Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 24V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-13	Time:23:41:23
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240B-24	Description:	Mode 1



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	31.9400	25.88	-5.11	20.77	30.00	-9.23	100	0	QP
2	61.0400	36.55	-15.29	21.26	30.00	-8.74	100	234	QP
3	119.2400	33.03	-11.88	21.15	30.00	-8.85	300	192	QP
4	210.4200	31.93	-9.31	22.62	30.00	-7.38	200	308	QP
5	745.8600	24.30	2.93	27.23	37.00	-9.77	100	351	QP
6	980.6000	23.17	6.14	29.31	37.00	-7.69	400	346	QP

Note: 1. The other emission levels were very low against the limit.

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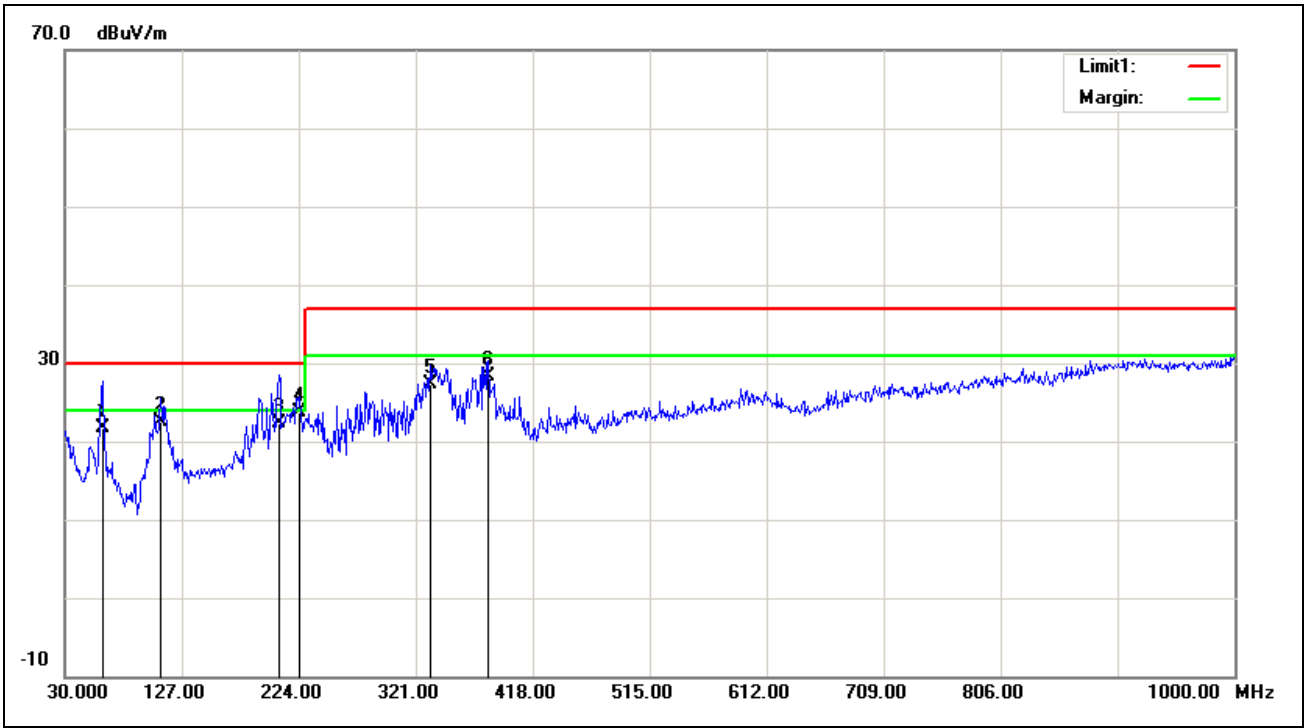
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 24V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-13	Time:23:41:22
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240B-24	Description:	Mode 1



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	61.2000	38.49	-16.87	21.62	30.00	-8.38	400	62	QP
2	109.5400	34.87	-12.31	22.56	30.00	-7.44	400	19	QP
3	207.2100	33.60	-11.34	22.26	30.00	-7.74	300	30	QP
4	224.0000	35.15	-11.45	23.70	30.00	-6.30	300	78	QP
5	332.6400	35.51	-8.19	27.32	37.00	-9.68	300	253	QP
6	381.1400	35.51	-7.25	28.26	37.00	-8.74	200	177	QP

Note: 1. The other emission levels were very low against the limit.

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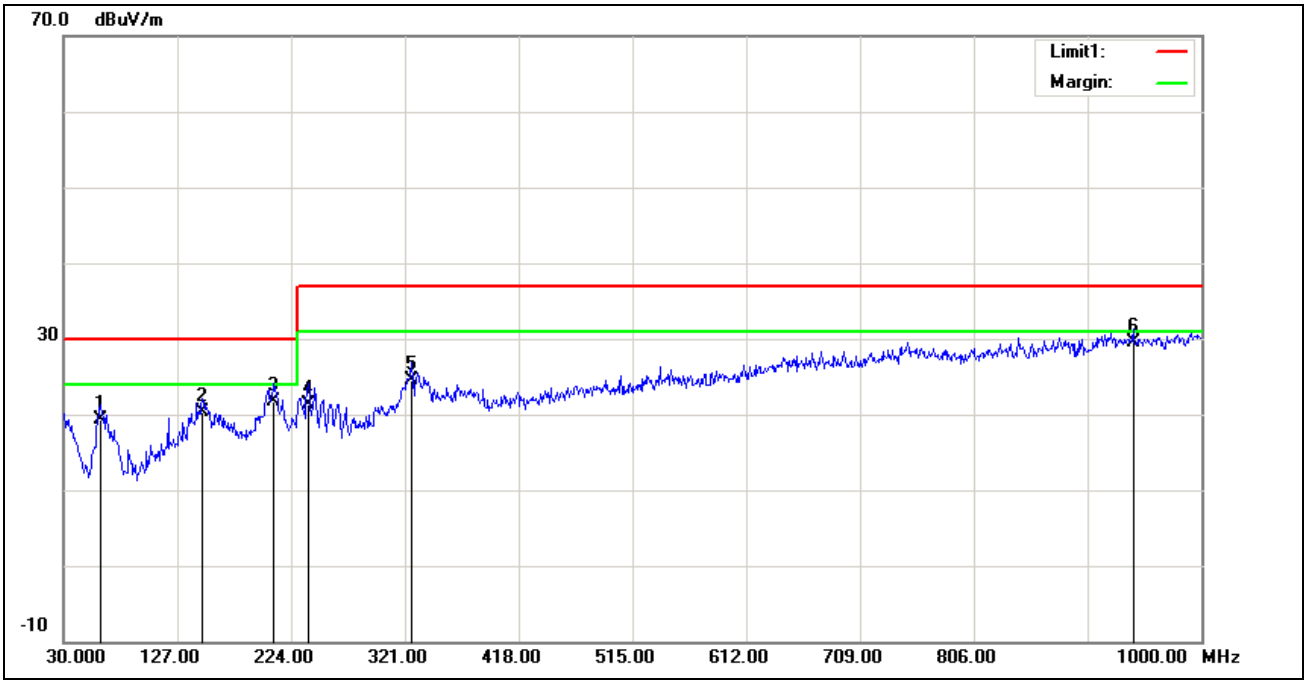
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 24V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:0:04:53
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240B-24	Description:	Mode 2



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	61.0400	34.62	-15.29	19.33	30.00	-10.67	100	66	QP
2	148.3400	29.93	-9.67	20.26	30.00	-9.74	100	222	QP
3	209.4500	30.92	-9.30	21.62	30.00	-8.38	100	60	QP
4	238.5500	30.69	-9.47	21.22	37.00	-15.78	100	264	QP
5	326.8200	31.04	-6.48	24.56	37.00	-12.44	100	190	QP
6	941.8000	24.28	5.28	29.56	37.00	-7.44	200	354	QP

Note: 1. The other emission levels were very low against the limit.

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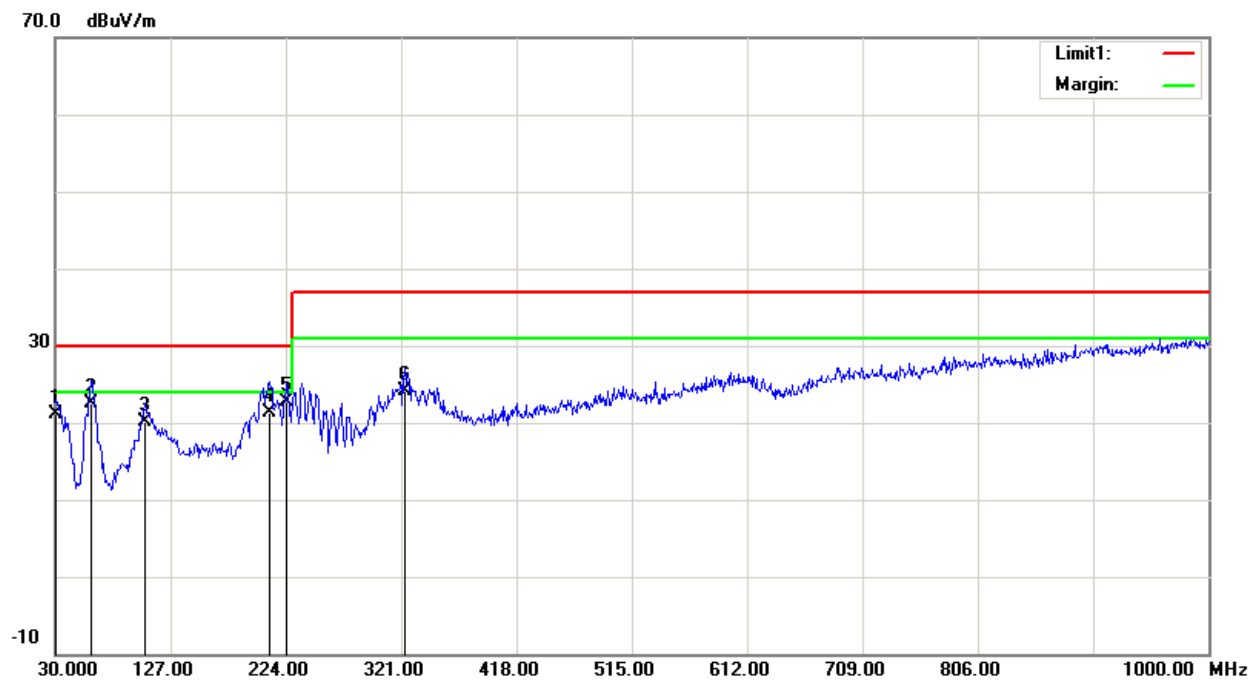
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 24V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:0:04:52
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240B-24	Description:	Mode 2



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	26.88	-5.82	21.06	30.00	-8.94	300	246	QP
2	60.0700	39.44	-16.98	22.46	30.00	-7.54	400	0	QP
3	105.6600	32.59	-12.47	20.12	30.00	-9.88	400	25	QP
4	210.4200	32.62	-11.36	21.26	30.00	-8.74	400	102	QP
5	224.9700	34.11	-11.45	22.66	30.00	-7.34	400	286	QP
6	323.9100	32.69	-8.49	24.20	37.00	-12.80	200	248	QP

Note: 1. The other emission levels were very low against the limit.

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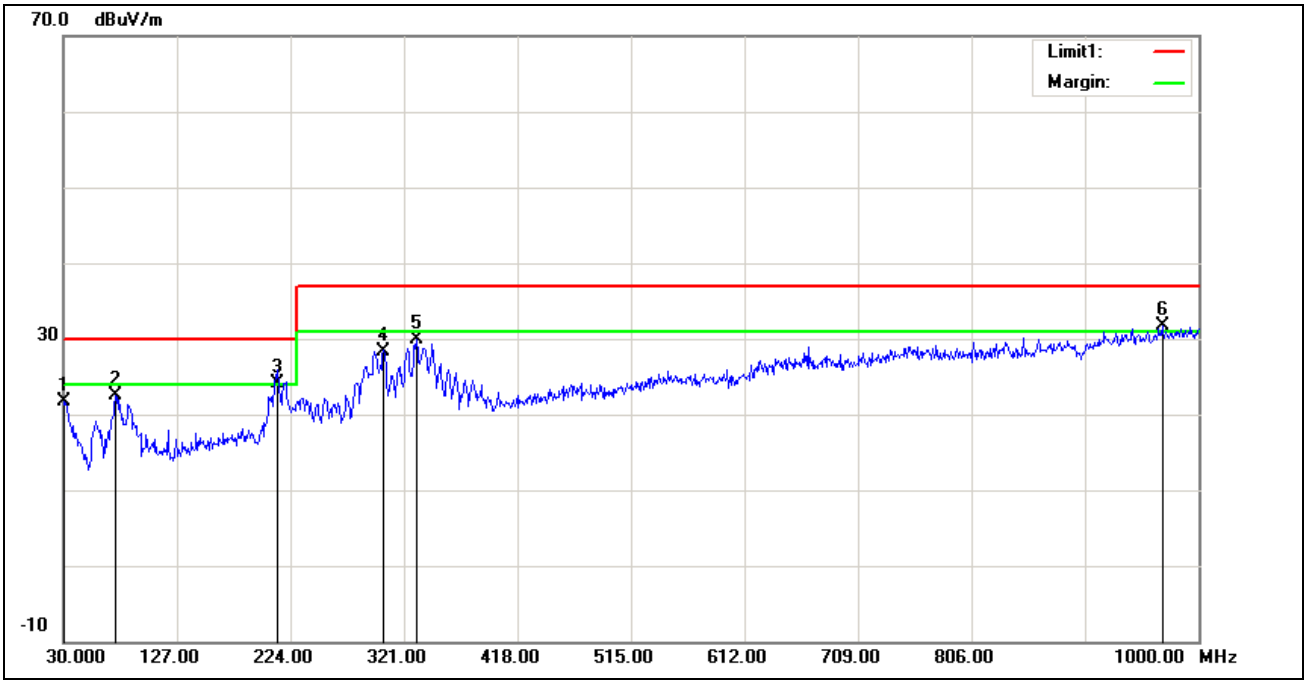
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 24V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-13	Time:22:51:33
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240B-48	Description:	Mode 3



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	25.73	-3.97	21.76	30.00	-8.24	300	76	QP
2	74.6200	37.58	-15.04	22.54	30.00	-7.46	400	236	QP
3	213.3300	33.48	-9.32	24.16	30.00	-5.84	100	73	QP
4	303.5400	36.03	-7.63	28.40	37.00	-8.60	100	17	QP
5	331.6700	36.05	-6.24	29.81	37.00	-7.19	100	53	QP
6	968.9600	25.78	5.86	31.64	37.00	-5.36	400	97	QP

Note: 1. The other emission levels were very low against the limit.

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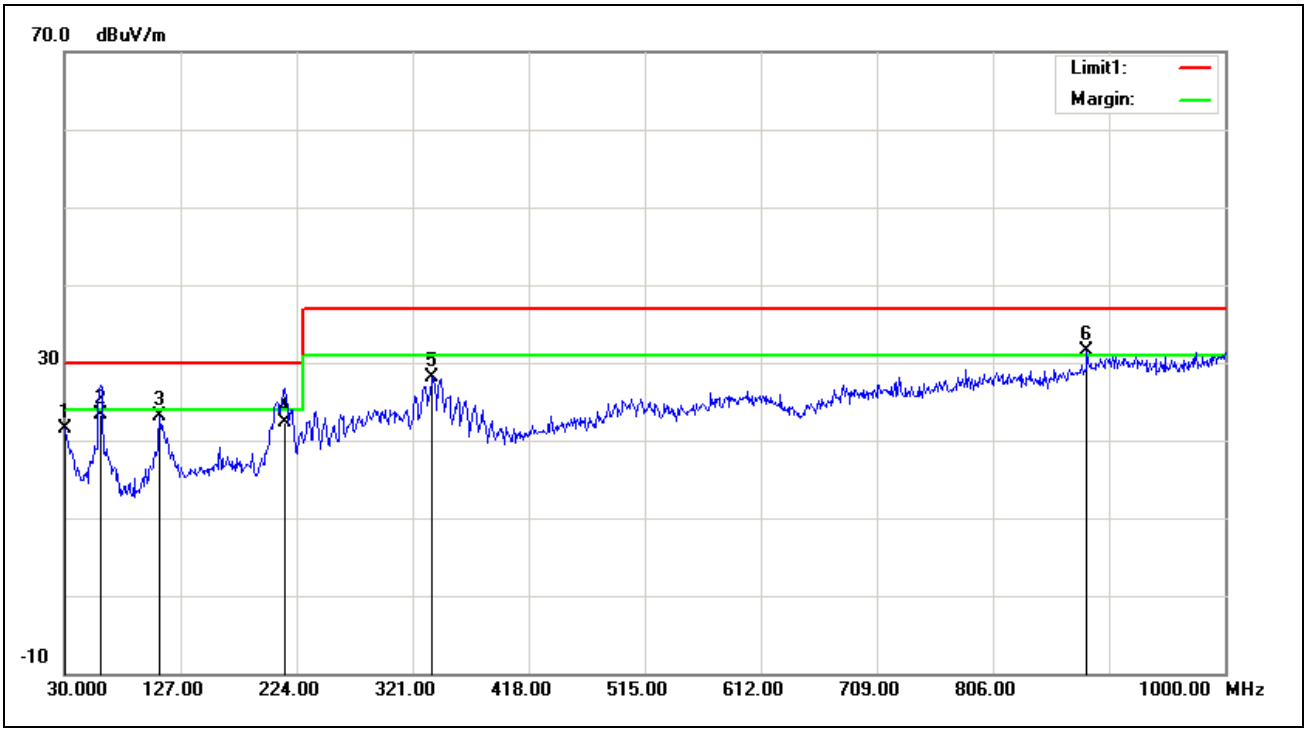
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 24V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-13	Time:22:51:32
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240B-48	Description:	Mode 3



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.9700	27.76	-6.32	21.44	30.00	-8.56	400	272	QP
2	60.2100	40.29	-16.97	23.32	30.00	-6.68	400	360	QP
3	109.5400	35.50	-12.31	23.19	30.00	-6.81	400	355	QP
4	214.4500	33.79	-11.39	22.40	30.00	-7.60	300	62	QP
5	337.4900	36.10	-8.03	28.07	37.00	-8.93	200	108	QP
6	884.5700	29.35	2.22	31.57	37.00	-5.43	300	249	QP

Note: 1. The other emission levels were very low against the limit.

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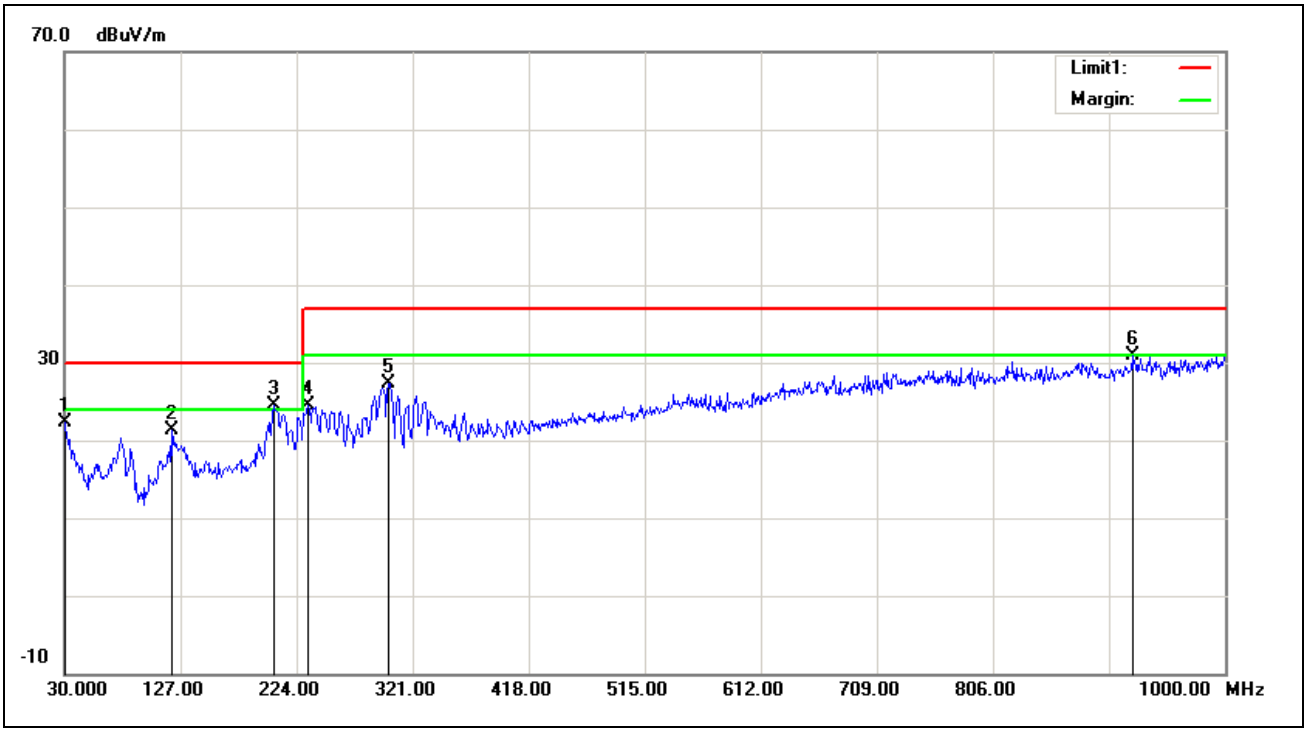
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 24V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-13	Time:23:14:21
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240B-48	Description:	Mode 4



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	26.26	-3.97	22.29	30.00	-7.71	101	318	QP
2	119.2400	33.26	-11.88	21.38	30.00	-8.62	200	242	QP
3	204.6000	33.77	-9.28	24.49	30.00	-5.51	101	352	QP
4	233.7000	33.87	-9.44	24.43	37.00	-12.57	101	96	QP
5	300.6300	35.15	-7.78	27.37	37.00	-9.63	101	24	QP
6	922.4000	25.92	4.97	30.89	37.00	-6.11	300	270	QP

Note: 1. The other emission levels were very low against the limit.

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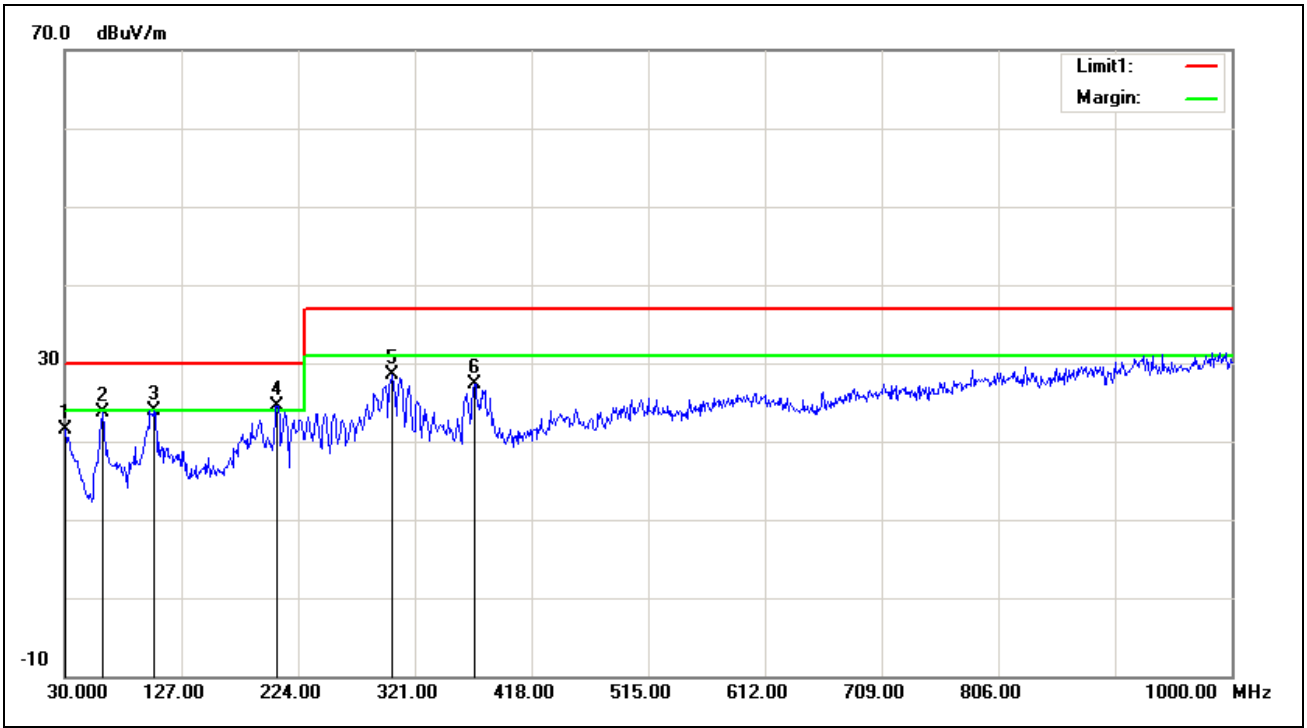
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 24V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-13	Time:23:14:20
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240B-48	Description:	Mode 4



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.9700	27.84	-6.32	21.52	30.00	-8.48	400	60	QP
2	61.0400	40.62	-16.88	23.74	30.00	-6.26	400	342	QP
3	103.7200	36.41	-12.54	23.87	30.00	-6.13	400	103	QP
4	206.5400	35.80	-11.33	24.47	30.00	-5.53	400	290	QP
5	302.5700	37.72	-9.22	28.50	37.00	-8.50	300	267	QP
6	370.4700	34.69	-7.37	27.32	37.00	-9.68	300	130	QP

Note: 1. The other emission levels were very low against the limit.

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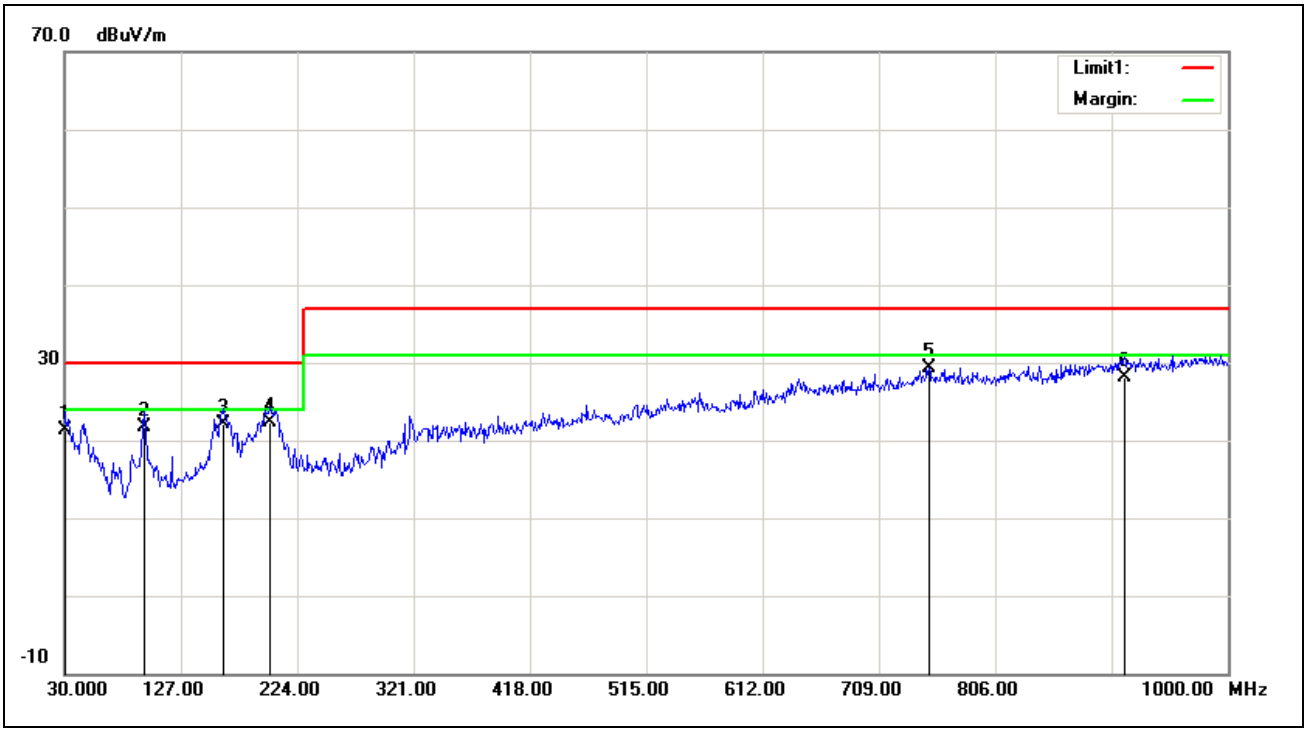
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 48V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:0:30:41
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240C-24	Description:	Mode 5



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	25.30	-3.97	21.33	30.00	-8.67	300	151	QP
2	95.9600	35.67	-13.97	21.70	30.00	-8.30	100	353	QP
3	161.9200	31.63	-9.47	22.16	30.00	-7.84	100	235	QP
4	201.6900	31.49	-9.26	22.23	30.00	-7.77	400	190	QP
5	750.7100	26.33	3.03	29.36	37.00	-7.64	100	101	QP
6	913.6700	23.28	4.84	28.12	37.00	-8.88	200	330	QP

Note: 1. The other emission levels were very low against the limit.

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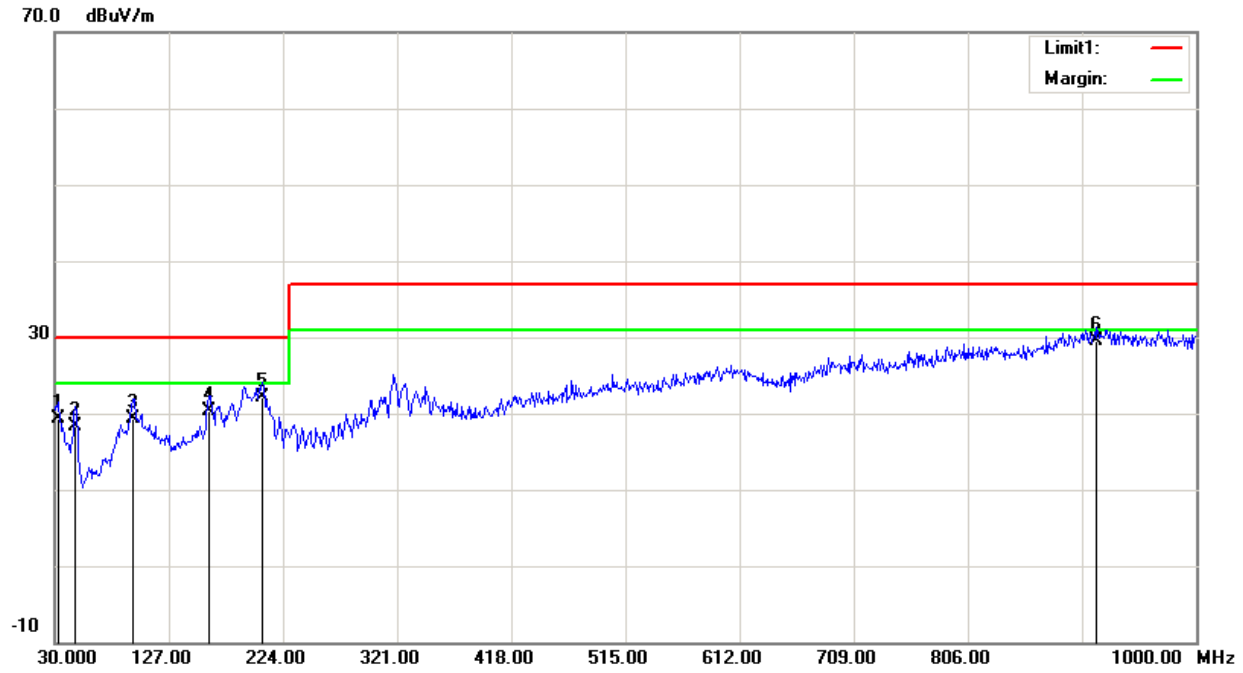
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 48V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:0:30:39
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240C-24	Description:	Mode 5



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	32.9100	26.66	-7.33	19.33	30.00	-10.67	300	341	QP
2	47.4600	33.11	-14.88	18.23	30.00	-11.77	400	0	QP
3	96.9300	32.92	-13.69	19.23	30.00	-10.77	400	26	QP
4	160.9500	31.15	-10.84	20.31	30.00	-9.69	300	193	QP
5	206.5400	33.38	-11.33	22.05	30.00	-7.95	400	293	QP
6	914.6400	26.77	2.78	29.55	37.00	-7.45	200	269	QP

Note: 1. The other emission levels were very low against the limit.

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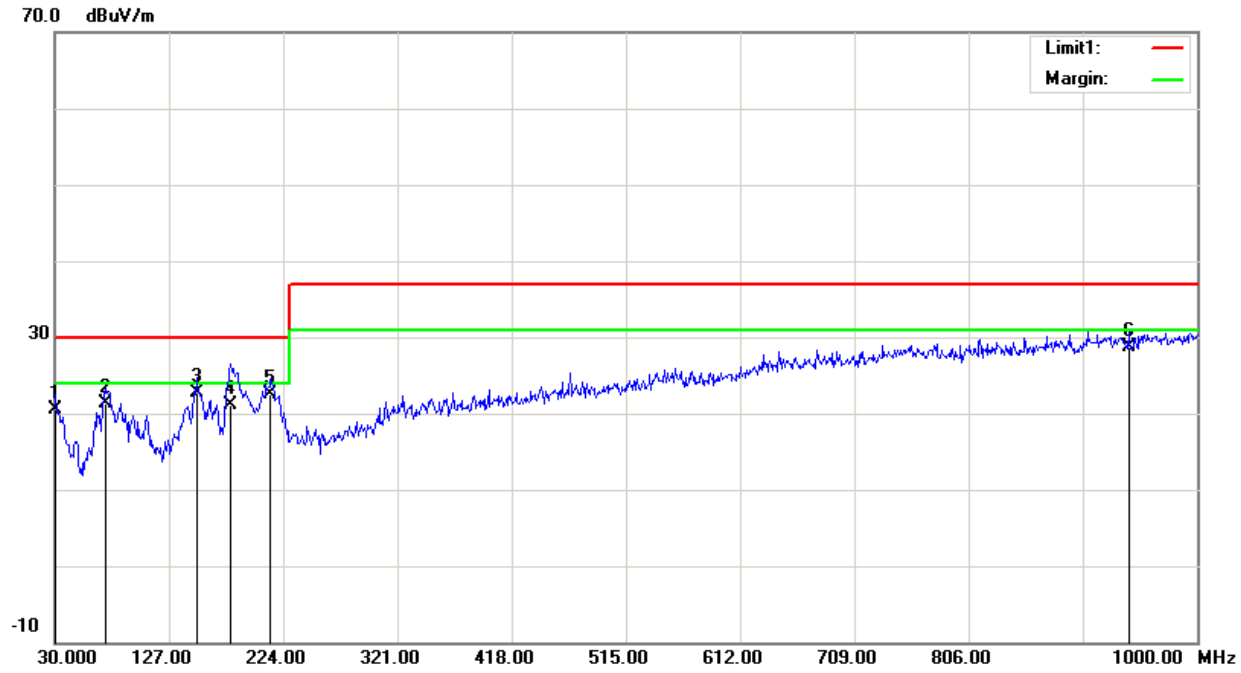
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 48V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:0:39:02
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240C-24	Description:	Mode 6



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	24.45	-3.97	20.48	30.00	-9.52	100	54	QP
2	73.6500	36.34	-15.00	21.34	30.00	-8.66	300	229	QP
3	150.2800	32.20	-9.54	22.66	30.00	-7.34	101	77	QP
4	179.6100	30.44	-9.37	21.07	30.00	-8.93	100	360	QP
5	213.3300	31.80	-9.32	22.48	30.00	-7.52	101	292	QP
6	941.8000	23.38	5.28	28.66	37.00	-8.34	200	359	QP

Note: 1. The other emission levels were very low against the limit.

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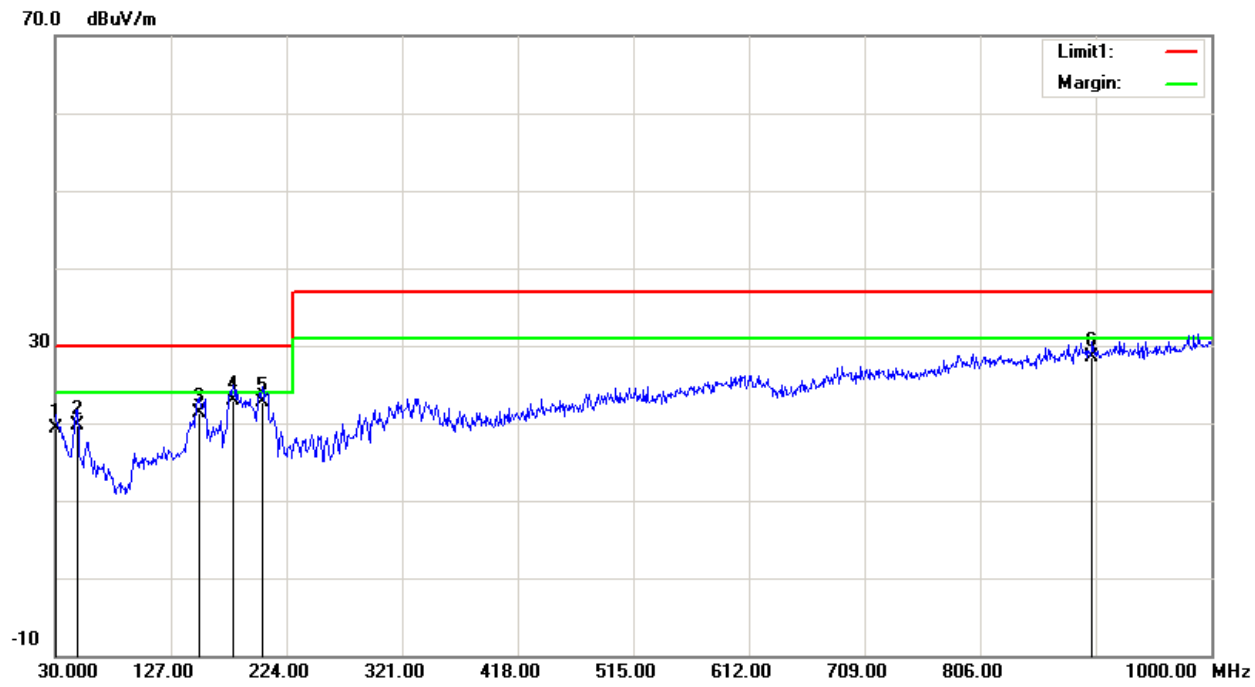
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 48V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:0:39:01
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240C-24	Description:	Mode 6



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	25.05	-5.82	19.23	30.00	-10.77	100	35	QP
2	48.4300	35.12	-15.38	19.74	30.00	-10.26	300	0	QP
3	150.2800	32.03	-10.71	21.32	30.00	-8.68	400	36	QP
4	179.3800	34.03	-11.05	22.98	30.00	-7.02	400	303	QP
5	203.6300	33.95	-11.31	22.64	30.00	-7.36	400	286	QP
6	900.0900	25.79	2.77	28.56	37.00	-8.44	300	271	QP

Note: 1. The other emission levels were very low against the limit.

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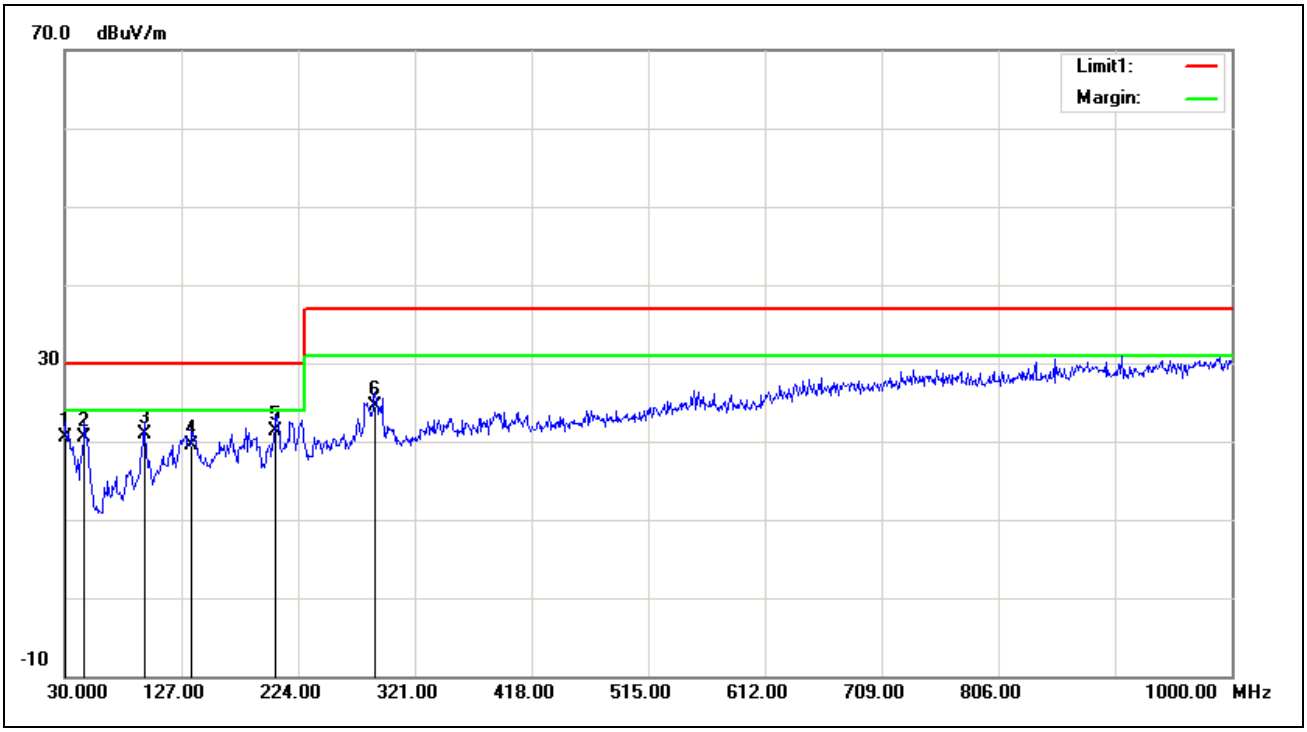
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 48V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:1:02:03
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240C-48	Description:	Mode 7



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	24.38	-3.97	20.41	30.00	-9.59	300	360	QP
2	46.4900	33.55	-13.11	20.44	30.00	-9.56	100	226	QP
3	95.9600	34.82	-13.97	20.85	30.00	-9.15	100	0	QP
4	135.7300	30.18	-10.62	19.56	30.00	-10.44	400	325	QP
5	205.5700	30.64	-9.28	21.36	30.00	-8.64	200	279	QP
6	288.0200	32.80	-8.22	24.58	37.00	-12.42	100	16	QP

Note: 1. The other emission levels were very low against the limit.

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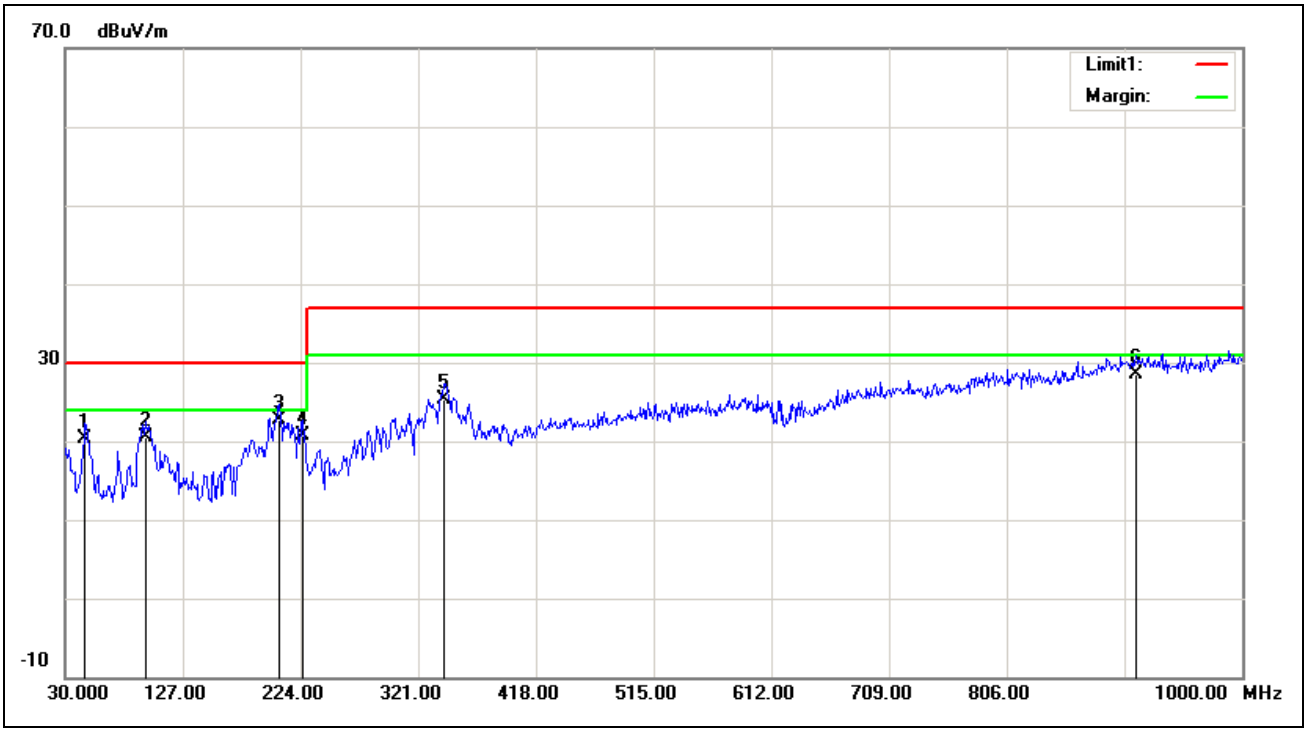
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 48V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:1:02:02
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240C-48	Description:	Mode 7



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	46.4900	34.61	-14.38	20.23	30.00	-9.77	400	355	QP
2	95.9600	34.57	-14.00	20.57	30.00	-9.43	400	33	QP
3	206.5400	34.11	-11.33	22.78	30.00	-7.22	300	299	QP
4	225.9400	32.11	-11.46	20.65	30.00	-9.35	400	269	QP
5	342.3400	33.22	-7.86	25.36	37.00	-11.64	300	113	QP
6	912.7000	25.67	2.78	28.45	37.00	-8.55	400	269	QP

Note: 1. The other emission levels were very low against the limit.

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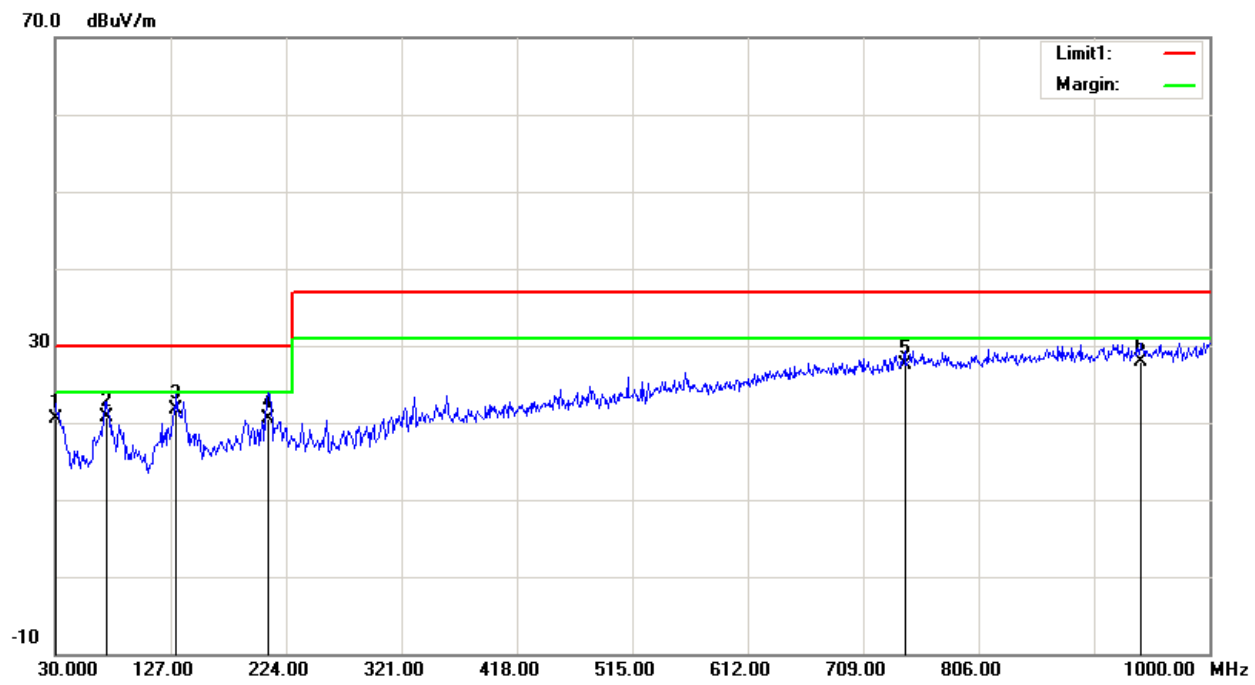
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 48V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:1:11:51
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240C-48	Description:	Mode 8



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	24.47	-3.97	20.50	30.00	-9.50	100	71	QP
2	72.6800	35.74	-14.97	20.77	30.00	-9.23	100	85	QP
3	131.8500	32.68	-10.92	21.76	30.00	-8.24	400	189	QP
4	208.4800	29.89	-9.30	20.59	30.00	-9.41	200	282	QP
5	743.9200	24.68	2.88	27.56	37.00	-9.44	200	165	QP
6	941.8000	22.71	5.28	27.99	37.00	-9.01	400	67	QP

Note: 1. The other emission levels were very low against the limit.

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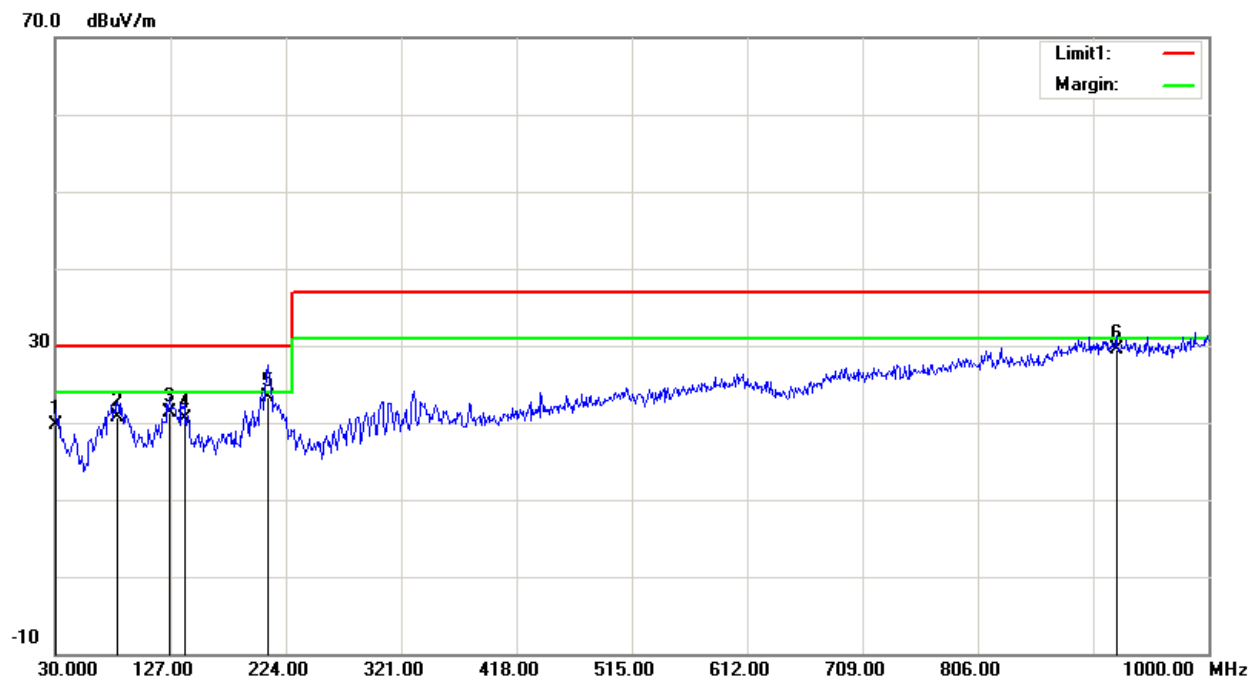
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 48V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:1:11:50
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240C-48	Description:	Mode 8



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	25.47	-5.82	19.65	30.00	-10.35	100	300	QP
2	82.3800	36.83	-16.04	20.79	30.00	-9.21	400	360	QP
3	126.0300	32.98	-11.66	21.32	30.00	-8.68	400	246	QP
4	138.6400	31.74	-11.16	20.58	30.00	-9.42	300	334	QP
5	208.5700	34.74	-11.35	23.39	30.00	-6.61	400	360	QP
6	922.4000	26.78	2.78	29.56	37.00	-7.44	300	88	QP

Note: 1. The other emission levels were very low against the limit.

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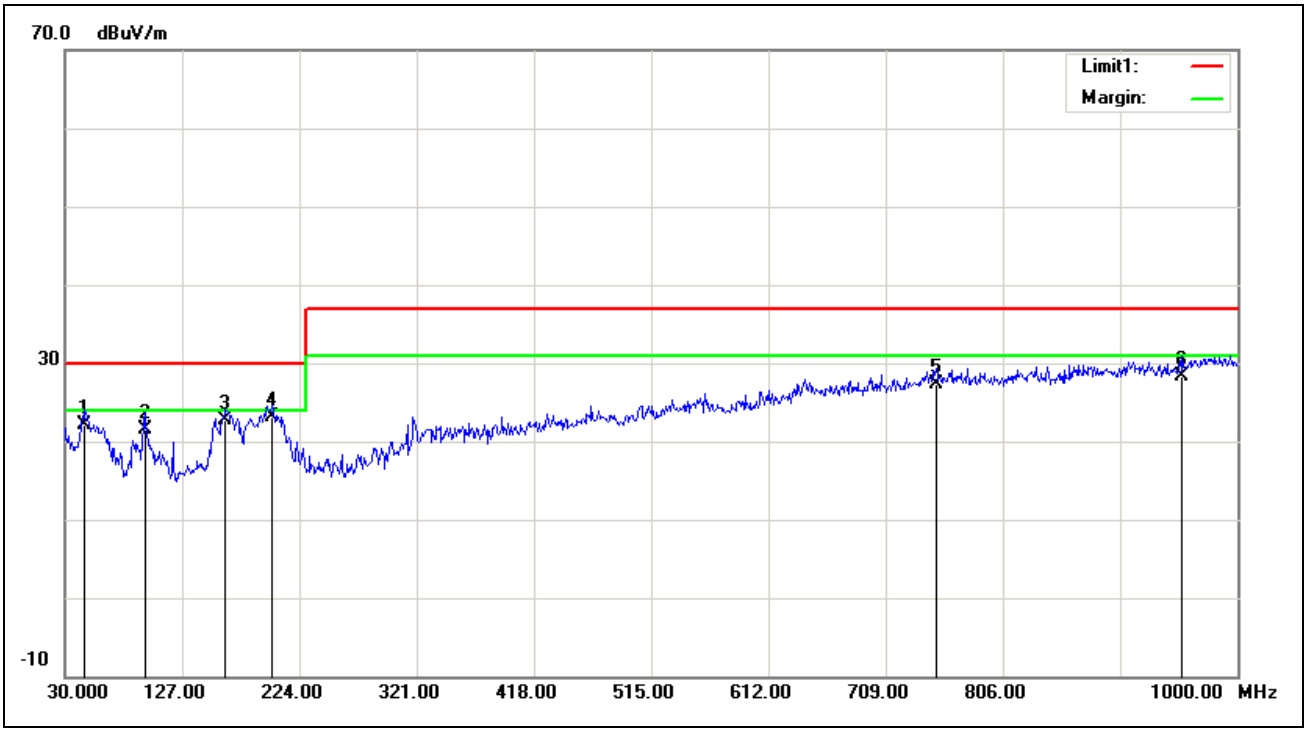
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 110V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:2:11:24
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240D-24	Description:	Mode 9



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	46.4900	35.15	-13.11	22.04	30.00	-7.96	200	42	QP
2	95.9600	35.39	-13.97	21.42	30.00	-8.58	100	301	QP
3	162.8900	32.08	-9.46	22.62	30.00	-7.38	100	33	QP
4	201.6900	32.40	-9.26	23.14	30.00	-6.86	200	256	QP
5	750.7100	24.22	3.03	27.25	37.00	-9.75	400	183	QP
6	954.4100	22.82	5.51	28.33	37.00	-8.67	100	33	QP

Note: 1. The other emission levels were very low against the limit.

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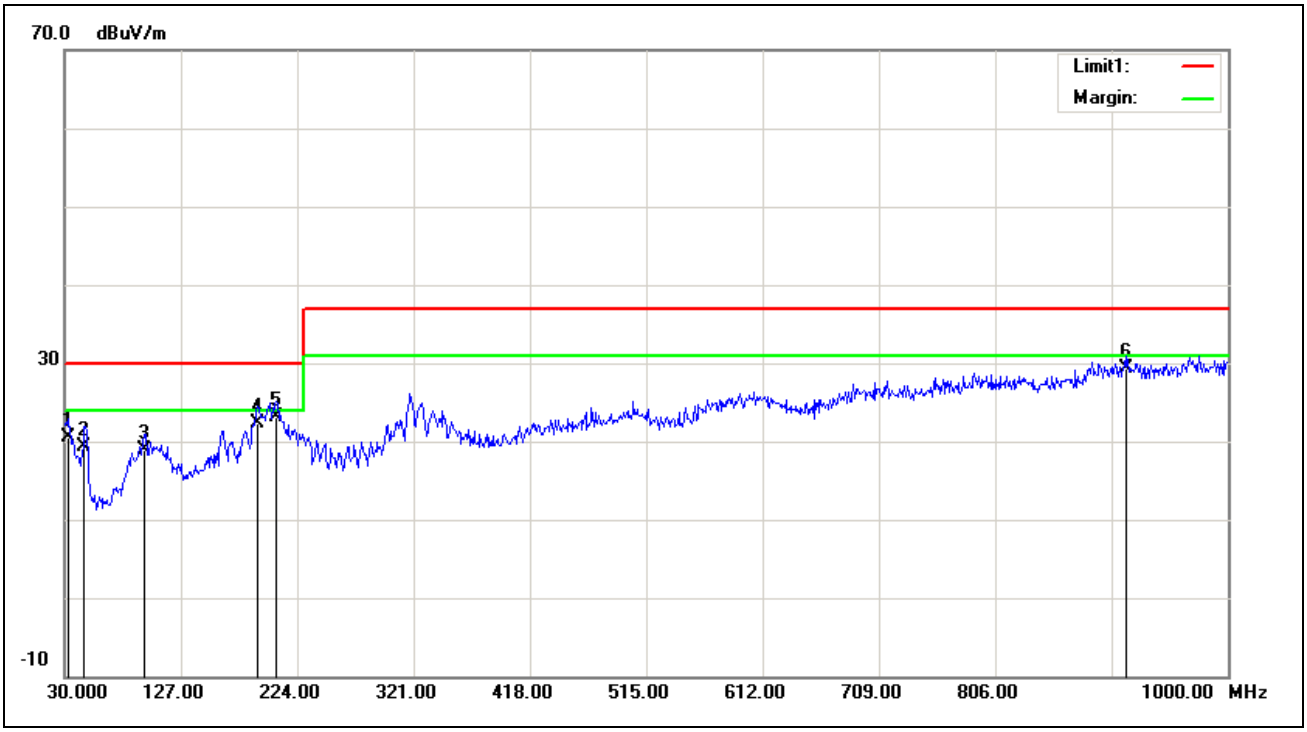
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 110V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:2:11:22
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240D-24	Description:	Mode 9



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	32.9100	27.80	-7.33	20.47	30.00	-9.53	200	123	QP
2	46.4900	33.63	-14.38	19.25	30.00	-10.75	100	33	QP
3	96.9300	32.67	-13.69	18.98	30.00	-11.02	100	35	QP
4	191.0200	33.53	-11.19	22.34	30.00	-7.66	100	248	QP
5	206.5400	34.47	-11.33	23.14	30.00	-6.86	400	251	QP
6	914.6400	26.55	2.78	29.33	37.00	-7.67	100	182	QP

Note: 1. The other emission levels were very low against the limit.

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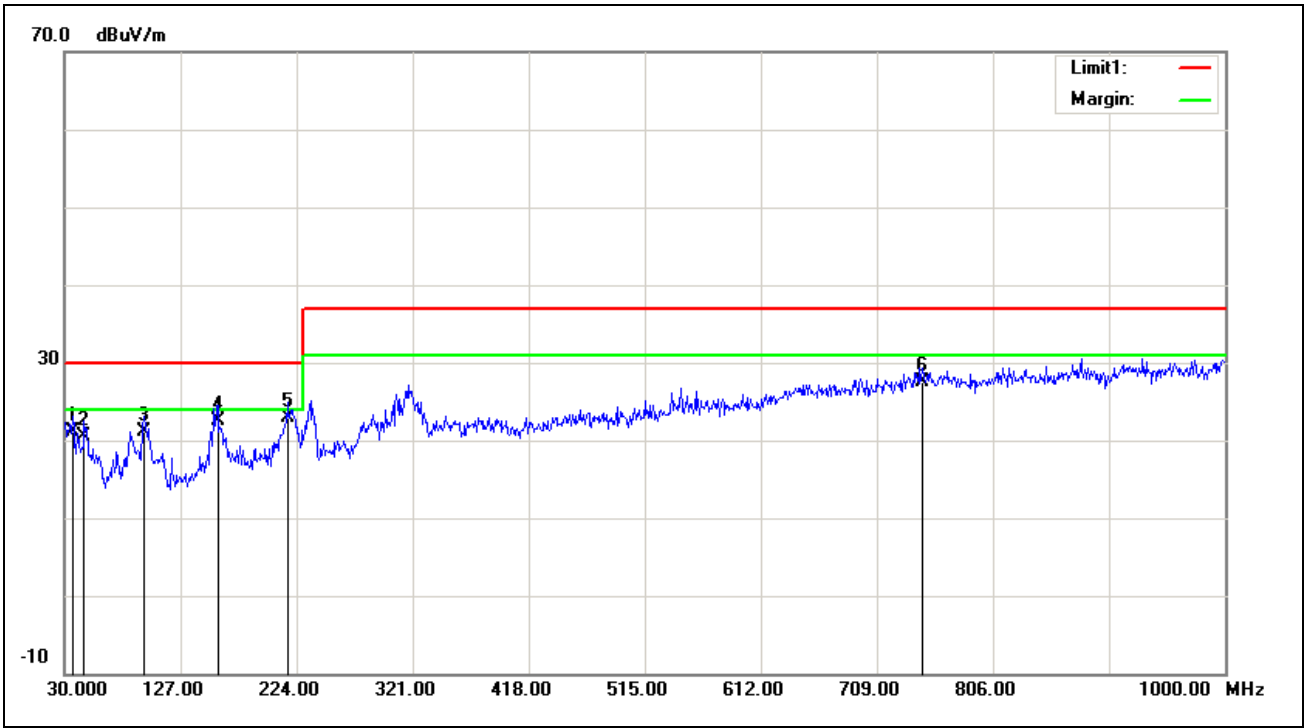
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 110V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:1:56:07
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240D-24	Description:	Mode 10



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	36.7900	29.04	-7.96	21.08	30.00	-8.92	400	68	QP
2	46.4900	33.56	-13.11	20.45	30.00	-9.55	400	234	QP
3	95.9600	35.14	-13.97	21.17	30.00	-8.83	200	0	QP
4	158.0400	32.04	-9.49	22.55	30.00	-7.45	300	360	QP
5	216.2400	32.18	-9.34	22.84	30.00	-7.16	200	360	QP
6	746.8300	24.50	2.95	27.45	37.00	-9.55	200	46	QP

Note: 1. The other emission levels were very low against the limit.

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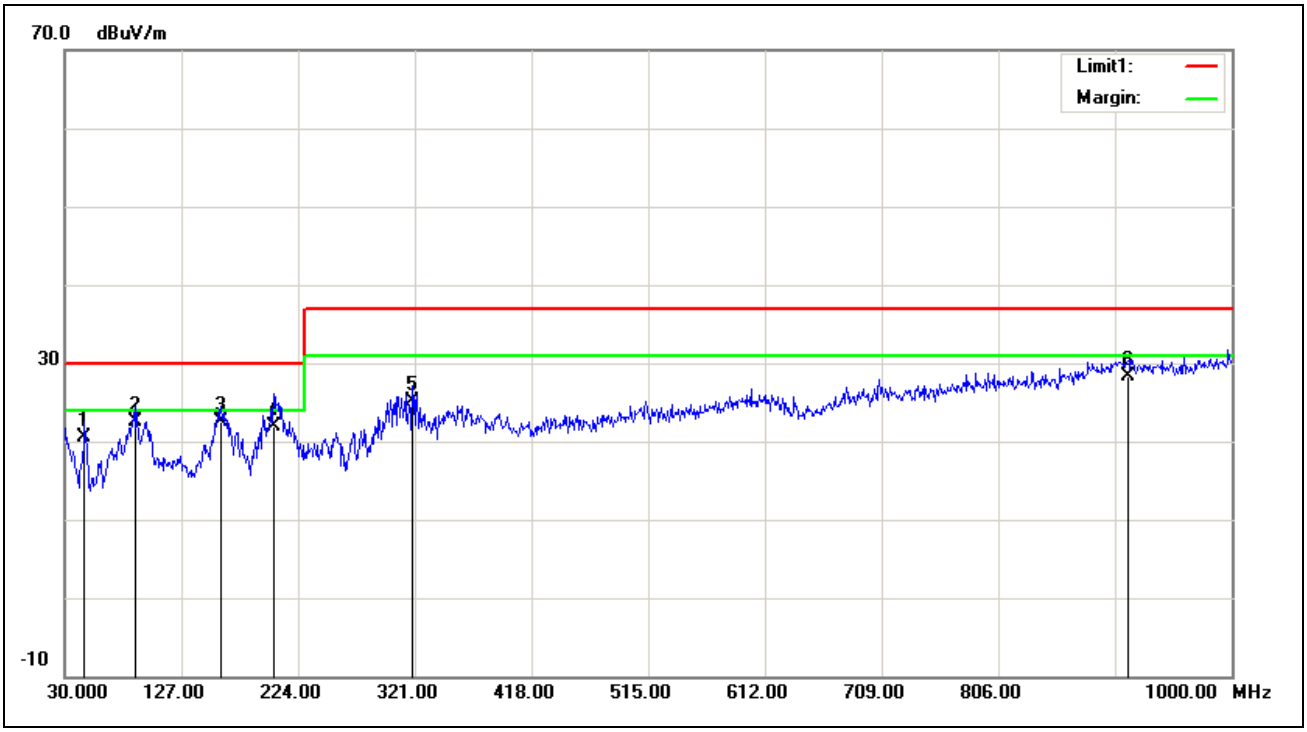
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 110V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:1:56:07
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240D-24	Description:	Mode 10



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	46.4900	34.97	-14.38	20.59	30.00	-9.41	200	360	QP
2	89.1700	38.41	-15.95	22.46	30.00	-7.54	400	10	QP
3	159.9800	33.26	-10.83	22.43	30.00	-7.57	100	316	QP
4	203.5300	33.14	-11.31	21.83	30.00	-8.17	200	360	QP
5	319.0600	33.73	-8.66	25.07	37.00	-11.93	300	246	QP
6	913.6700	25.61	2.78	28.39	37.00	-8.61	200	175	QP

Note: 1. The other emission levels were very low against the limit.

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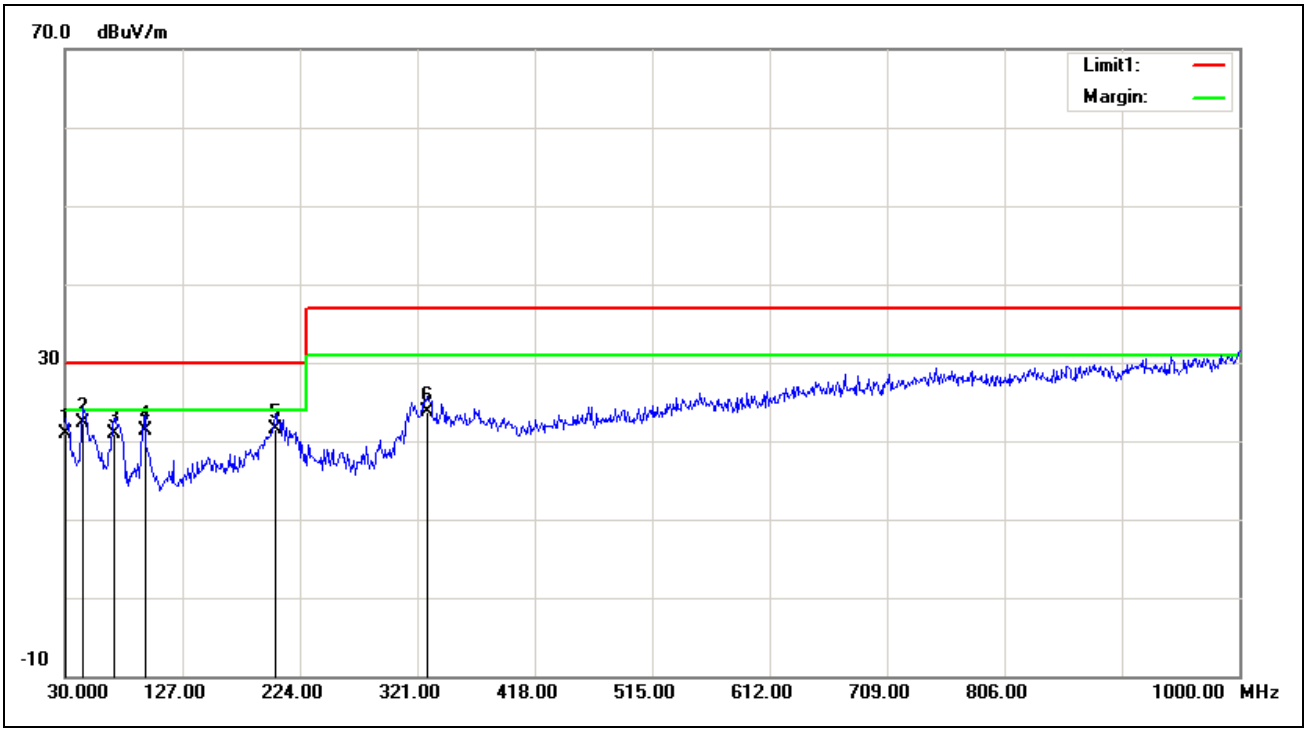
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 110V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:1:32:20
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240D-48	Description:	Mode 11



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	24.92	-3.97	20.95	30.00	-9.05	200	129	QP
2	44.5500	34.39	-12.14	22.25	30.00	-7.75	200	232	QP
3	70.7400	35.88	-14.90	20.98	30.00	-9.02	400	33	QP
4	95.9600	35.27	-13.97	21.30	30.00	-8.70	400	0	QP
5	203.6300	30.80	-9.27	21.53	30.00	-8.47	300	13	QP
6	328.7600	30.17	-6.38	23.79	37.00	-13.21	200	53	QP

Note: 1. The other emission levels were very low against the limit.

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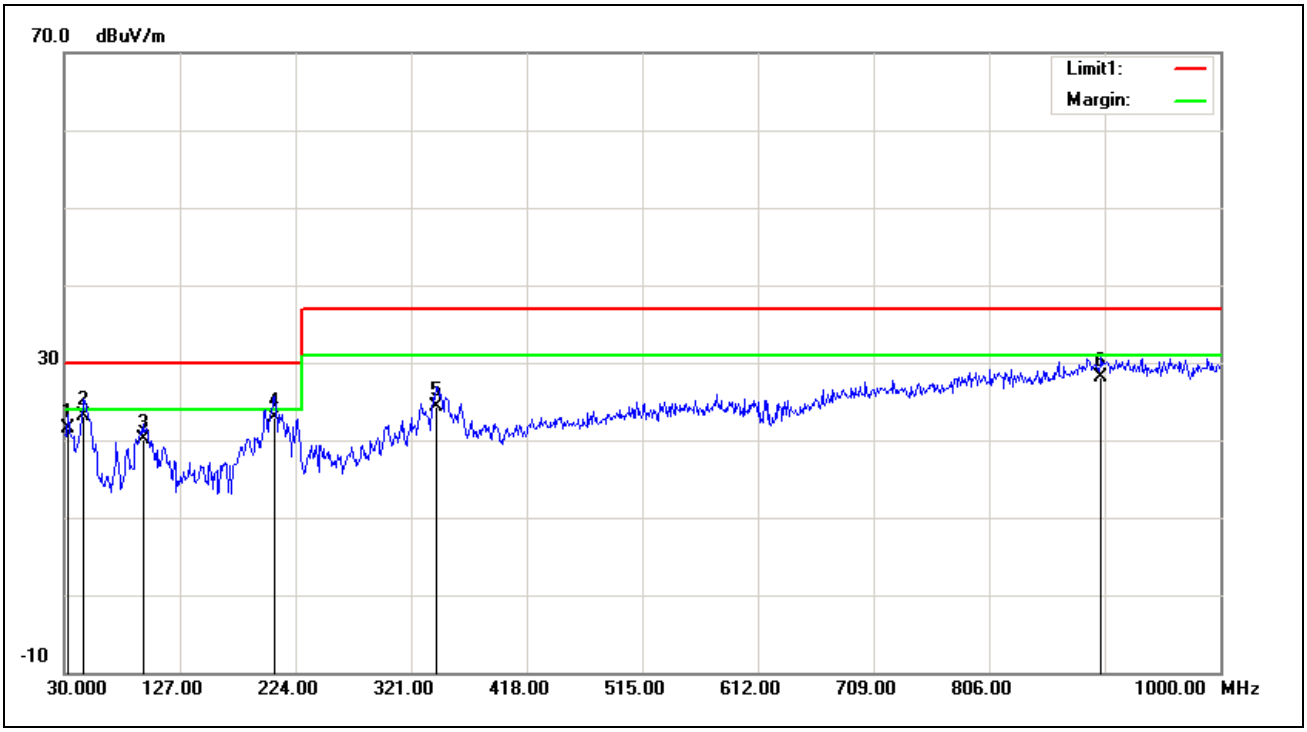
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 110V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:1:32:19
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240D-48	Description:	Mode 11



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	32.9100	28.79	-7.33	21.46	30.00	-8.54	200	183	QP
2	46.4900	37.39	-14.38	23.01	30.00	-6.99	400	301	QP
3	95.9600	34.14	-14.00	20.14	30.00	-9.86	100	33	QP
4	206.5400	34.31	-11.33	22.98	30.00	-7.02	100	42	QP
5	342.3400	32.19	-7.86	24.33	37.00	-12.67	400	32	QP
6	900.0900	25.42	2.77	28.19	37.00	-8.81	100	216	QP

Note: 1. The other emission levels were very low against the limit.

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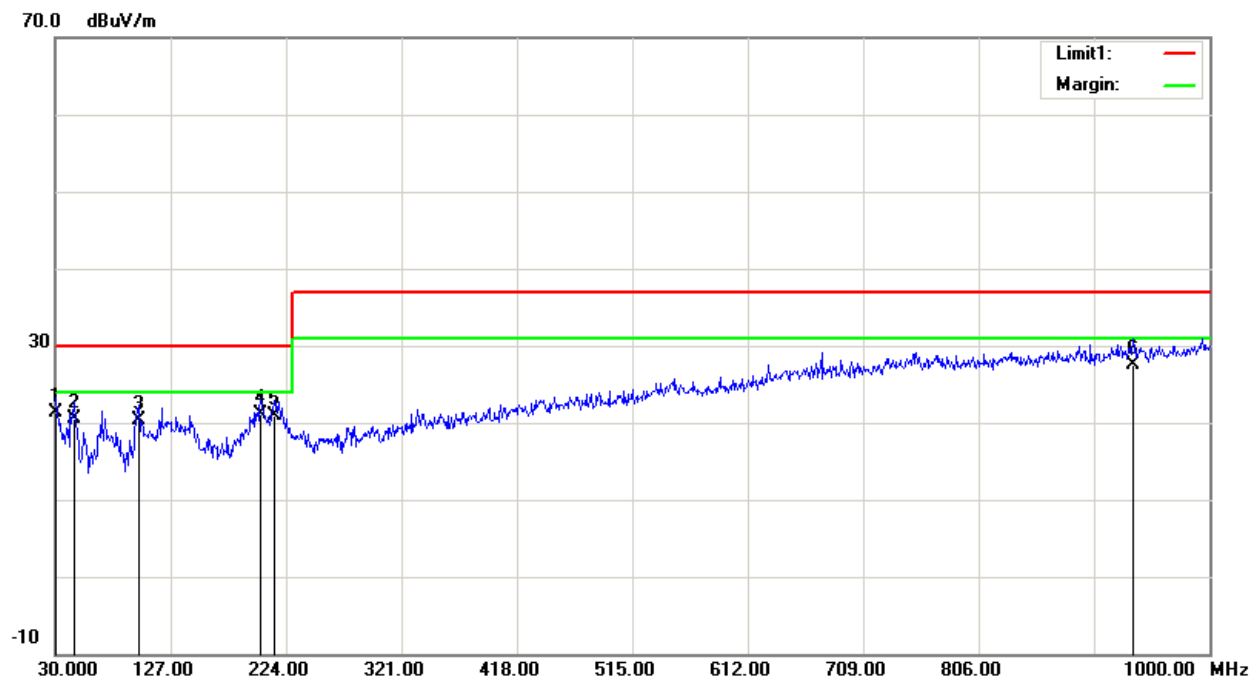
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 110V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:1:39:21
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240D-48	Description:	Mode 12



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.9700	25.88	-4.54	21.34	30.00	-8.66	300	260	QP
2	46.4900	33.71	-13.11	20.60	30.00	-9.40	200	278	QP
3	99.8400	33.73	-13.37	20.36	30.00	-9.64	100	360	QP
4	202.6600	30.30	-9.26	21.04	30.00	-8.96	400	198	QP
5	214.3000	30.29	-9.33	20.96	30.00	-9.04	200	162	QP
6	935.9800	22.39	5.19	27.58	37.00	-9.42	200	71	QP

Note: 1. The other emission levels were very low against the limit.

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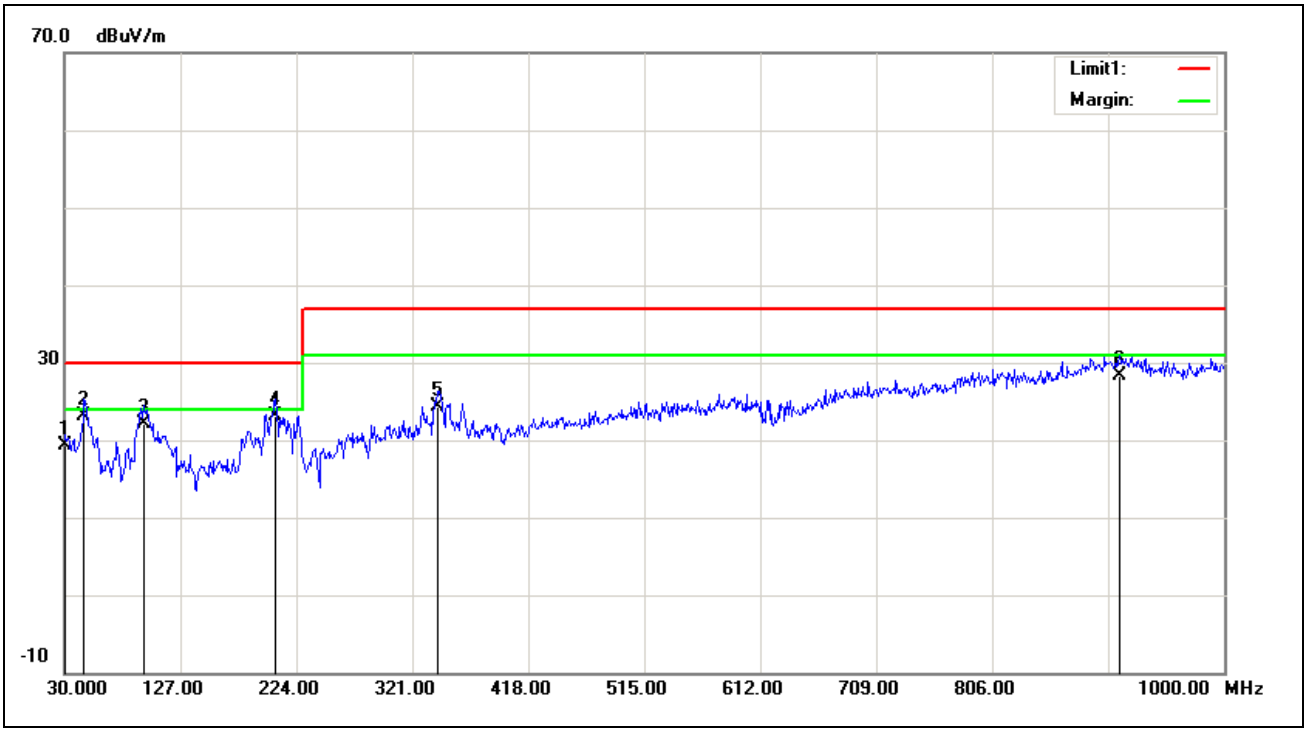
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 110V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-6-14	Time:1:39:19
Company:	MEAN WELL	Test By:	Osmond.Chen
Model:	DDR-240D-48	Description:	Mode 12



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.0000	25.06	-5.82	19.24	30.00	-10.76	100	142	QP
2	46.4900	37.57	-14.38	23.19	30.00	-6.81	400	33	QP
3	95.9600	36.18	-14.00	22.18	30.00	-7.82	200	145	QP
4	206.5400	34.47	-11.33	23.14	30.00	-6.86	100	253	QP
5	342.3400	32.12	-7.86	24.26	37.00	-12.74	100	156	QP
6	912.7000	25.55	2.78	28.33	37.00	-8.67	100	301	QP

Note: 1. The other emission levels were very low against the limit.

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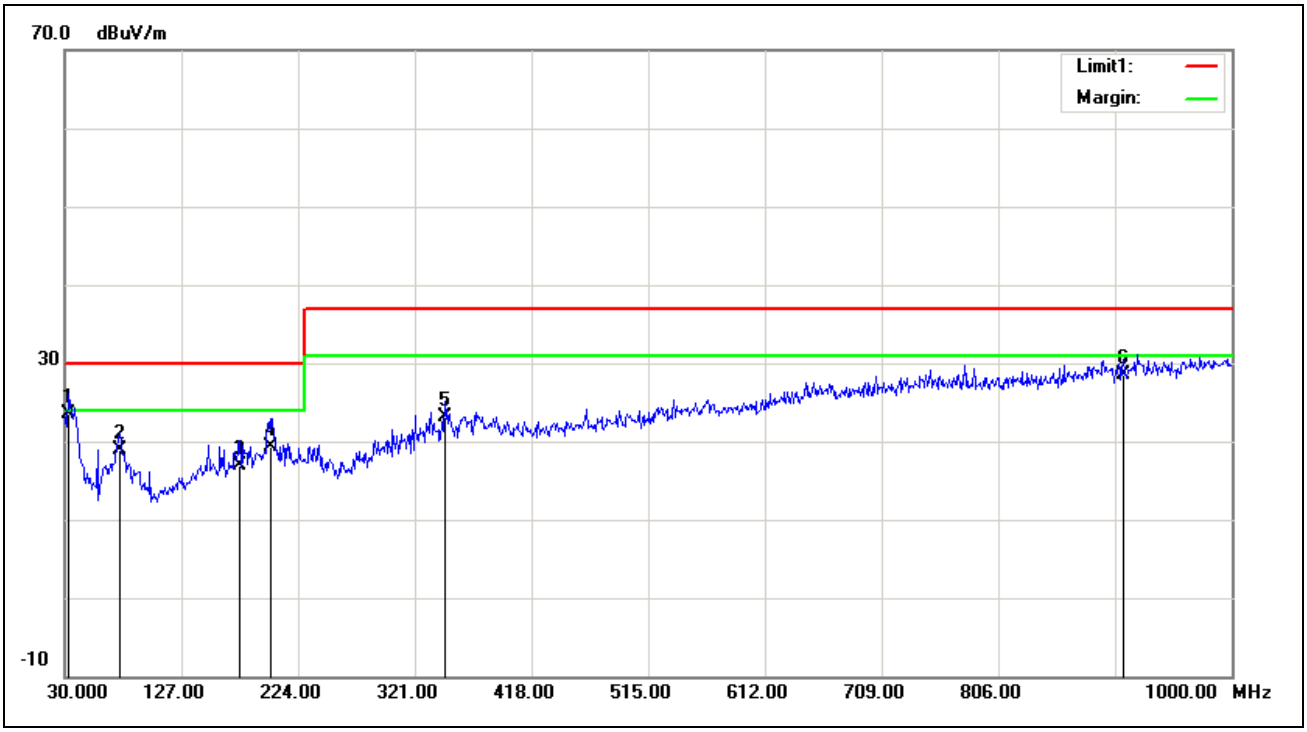
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 96V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-7-6	Time:16:16:15
Company:	MEAN WELL	Test By:	King.Xu
Model:	DDR-240D-24	Description:	Mode 13



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	32.9100	29.19	-5.68	23.51	30.00	-6.49	100	229	QP
2	75.5900	33.90	-15.08	18.82	30.00	-11.18	100	277	QP
3	175.5000	26.27	-9.39	16.88	30.00	-13.12	100	359	QP
4	201.6900	28.64	-9.26	19.38	30.00	-10.62	100	173	QP
5	346.2200	28.55	-5.52	23.03	37.00	-13.97	100	85	QP
6	909.7900	23.68	4.77	28.45	37.00	-8.55	100	22	QP

Note: 1. The other emission levels were very low against the limit.

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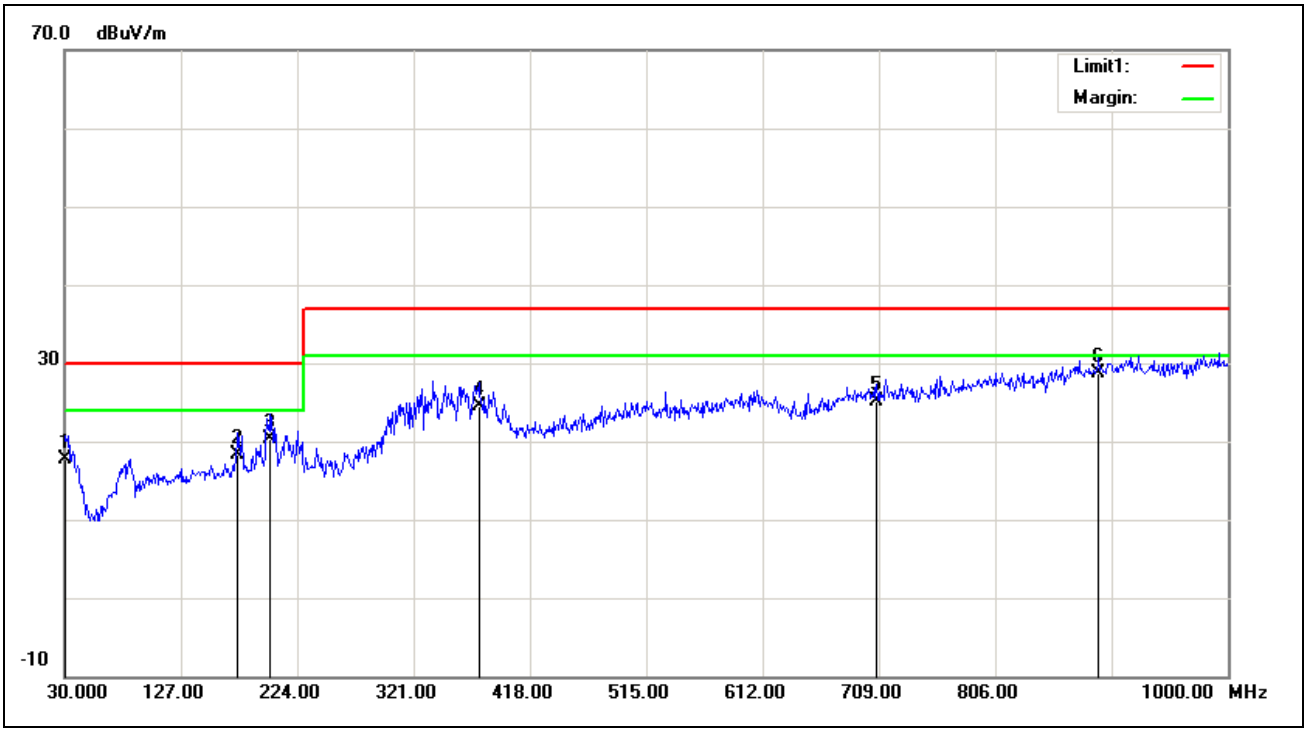
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 96V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-7-6	Time:16:16:14
Company:	MEAN WELL	Test By:	King.Xu
Model:	DDR-240D-24	Description:	Mode 13



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.9700	24.01	-6.32	17.69	30.00	-12.31	400	200	QP
2	174.5300	29.32	-10.99	18.33	30.00	-11.67	400	285	QP
3	201.6900	31.66	-11.30	20.36	30.00	-9.64	400	294	QP
4	375.3200	31.83	-7.32	24.51	37.00	-12.49	200	233	QP
5	707.0600	26.06	-1.05	25.01	37.00	-11.99	400	1	QP
6	892.3300	26.17	2.50	28.67	37.00	-8.33	100	1	QP

Note: 1. The other emission levels were very low against the limit.

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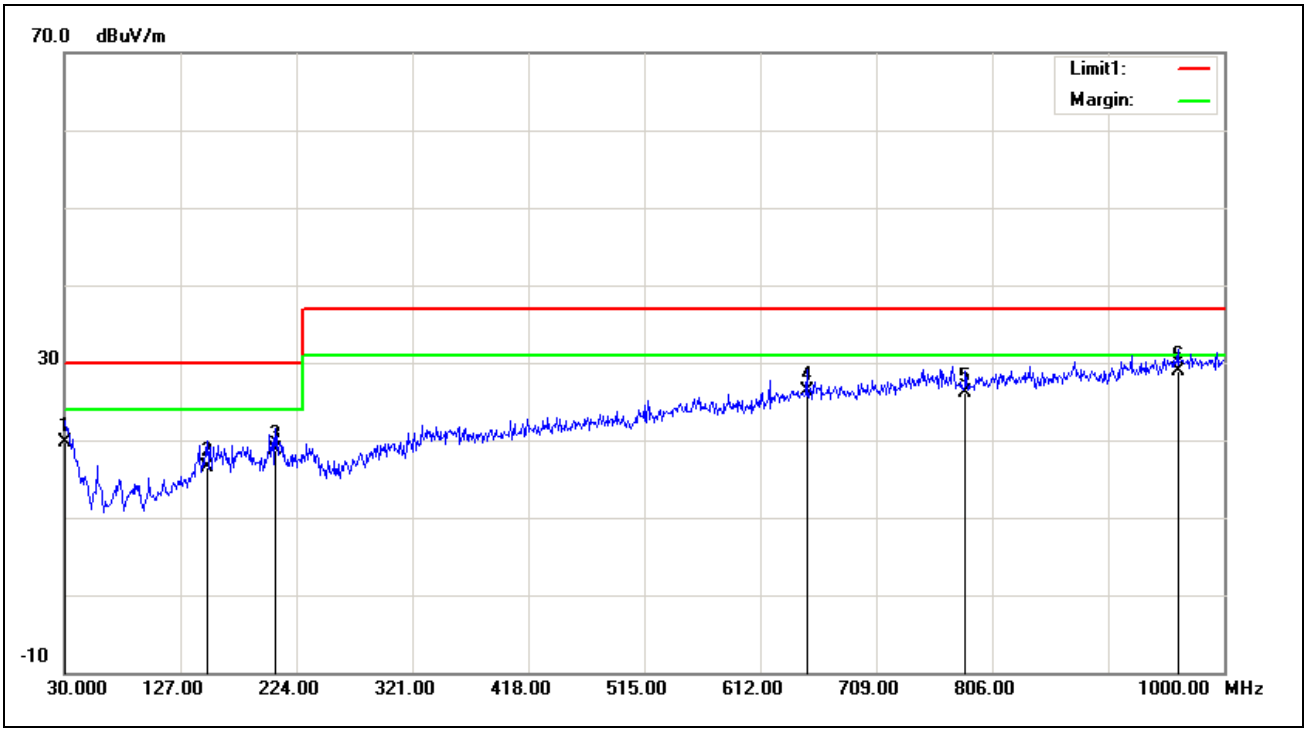
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 96V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-7-6	Time:16:29:32
Company:	MEAN WELL	Test By:	King.Xu
Model:	DDR-240D-24	Description:	Mode 14



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.9700	24.21	-4.54	19.67	30.00	-10.33	100	0	QP
2	149.3100	26.18	-9.59	16.59	30.00	-13.41	100	62	QP
3	206.5400	28.05	-9.29	18.76	30.00	-11.24	100	42	QP
4	650.8000	24.79	1.56	26.35	37.00	-10.65	100	240	QP
5	783.6900	23.17	3.02	26.19	37.00	-10.81	400	290	QP
6	961.2000	23.22	5.68	28.90	37.00	-8.10	400	0	QP

Note: 1. The other emission levels were very low against the limit.

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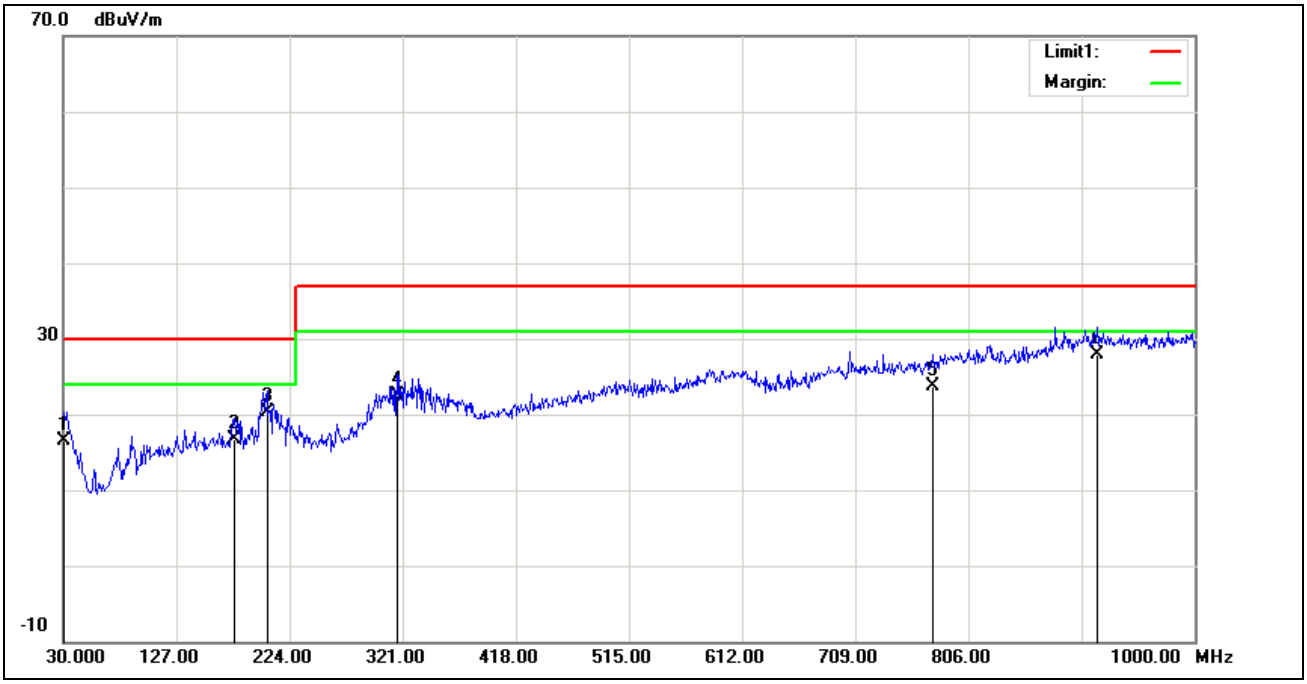
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 96V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-7-6	Time:16:29:31
Company:	MEAN WELL	Test By:	King.Xu
Model:	DDR-240D-24	Description:	Mode 14



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	30.9700	22.91	-6.32	16.59	30.00	-13.41	400	12	QP
2	176.4700	27.70	-11.02	16.68	30.00	-13.32	400	287	QP
3	204.6000	31.65	-11.32	20.33	30.00	-9.67	400	283	QP
4	316.1500	31.22	-8.76	22.46	37.00	-14.54	400	103	QP
5	775.9300	23.87	-0.16	23.71	37.00	-13.29	400	227	QP
6	916.5800	25.20	2.78	27.98	37.00	-9.02	100	45	QP

Note: 1. The other emission levels were very low against the limit.

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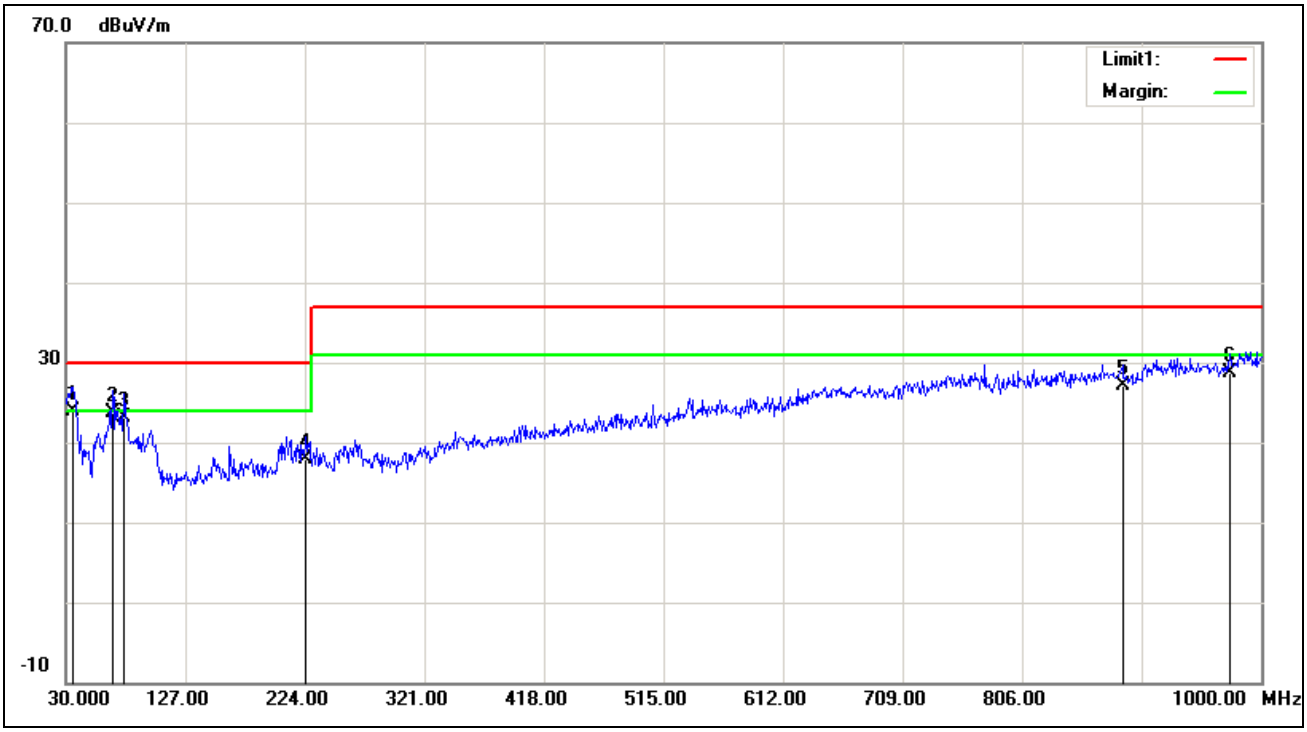
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 96V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-7-6	Time:15:24:45
Company:	MEAN WELL	Test By:	King.Xu
Model:	DDR-240D-48	Description:	Mode 15



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	35.8200	31.26	-7.39	23.87	30.00	-6.13	100	298	QP
2	67.8300	38.63	-14.97	23.66	30.00	-6.34	400	12	QP
3	77.5300	38.20	-15.15	23.05	30.00	-6.95	400	221	QP
4	224.9700	27.24	-9.39	17.85	30.00	-12.15	100	196	QP
5	887.4800	22.77	4.39	27.16	37.00	-9.84	100	9	QP
6	974.7800	22.65	6.00	28.65	37.00	-8.35	100	335	QP

Note: 1. The other emission levels were very low against the limit.

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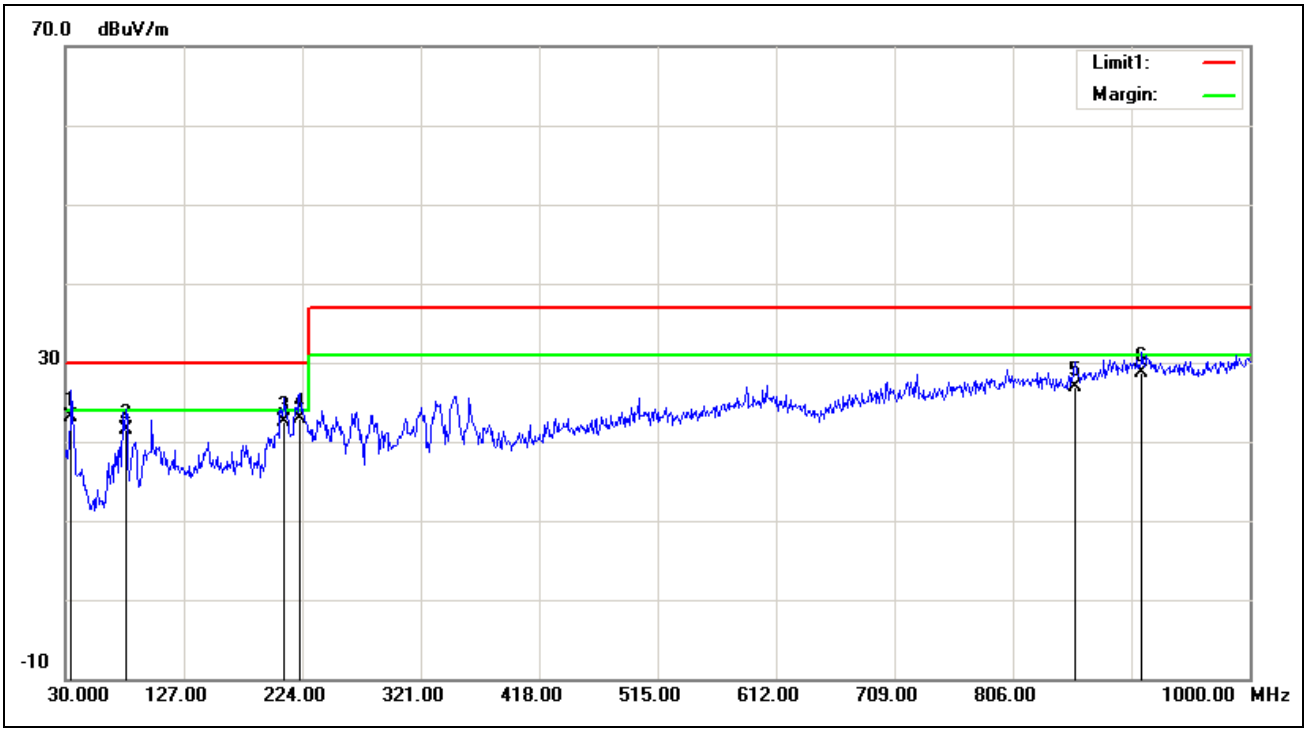
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 96V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-7-6	Time:15:24:44
Company:	MEAN WELL	Test By:	King.Xu
Model:	DDR-240D-48	Description:	Mode 15



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	34.8500	31.35	-8.34	23.01	30.00	-6.99	400	132	QP
2	79.4700	37.55	-16.06	21.49	30.00	-8.51	400	360	QP
3	209.4500	33.95	-11.35	22.60	30.00	-7.40	300	286	QP
4	222.0600	34.25	-11.44	22.81	30.00	-7.19	400	292	QP
5	856.4400	25.78	1.22	27.00	37.00	-10.00	100	301	QP
6	911.7300	25.88	2.78	28.66	37.00	-8.34	200	140	QP

Note: 1. The other emission levels were very low against the limit.

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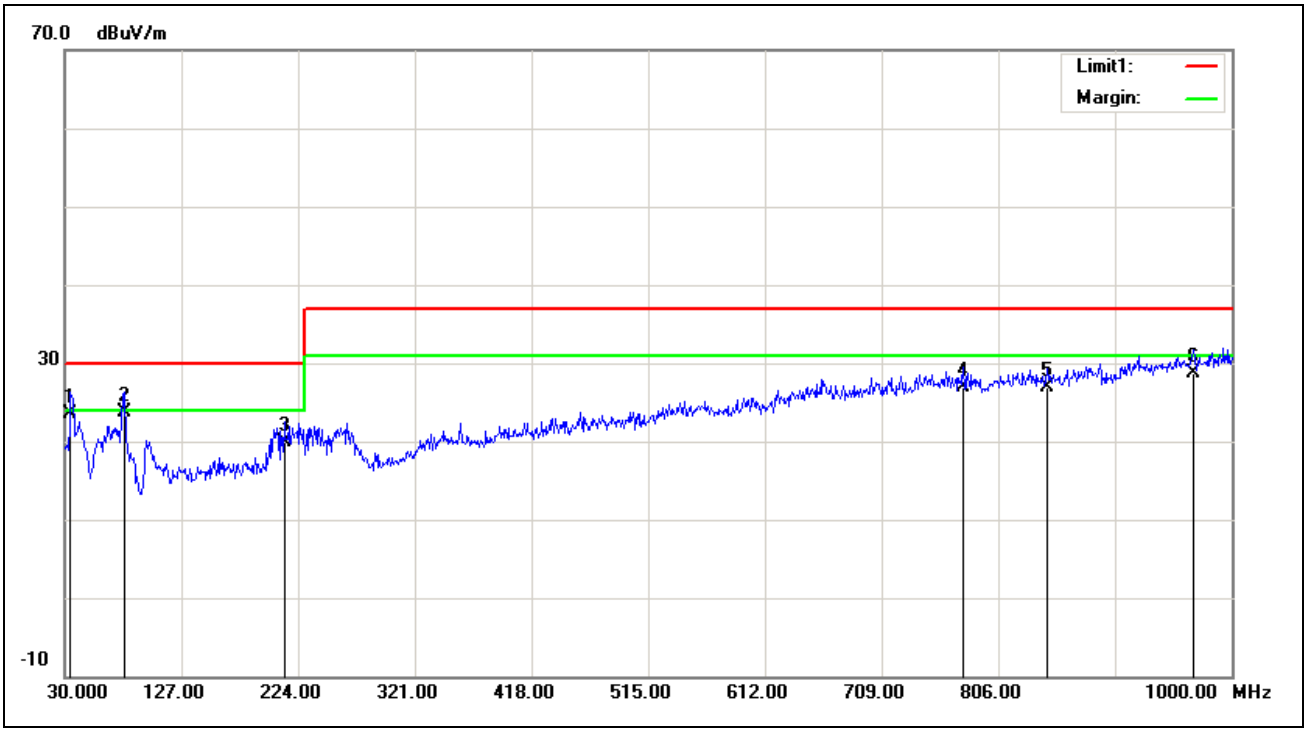
Job No.:	C180611E01	Ant.Polar.:	Vertical
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 96V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-7-6	Time:15:13:08
Company:	MEAN WELL	Test By:	King.Xu
Model:	DDR-240D-48	Description:	Mode 16



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	34.8500	30.40	-6.82	23.58	30.00	-6.42	100	229	QP
2	79.4700	38.88	-15.22	23.66	30.00	-6.34	100	252	QP
3	212.3600	29.18	-9.32	19.86	30.00	-10.14	100	49	QP
4	776.9000	23.85	3.02	26.87	37.00	-10.13	400	112	QP
5	846.7400	23.33	3.66	26.99	37.00	-10.01	100	135	QP
6	967.9900	22.92	5.84	28.76	37.00	-8.24	100	1	QP

Note: 1. The other emission levels were very low against the limit.

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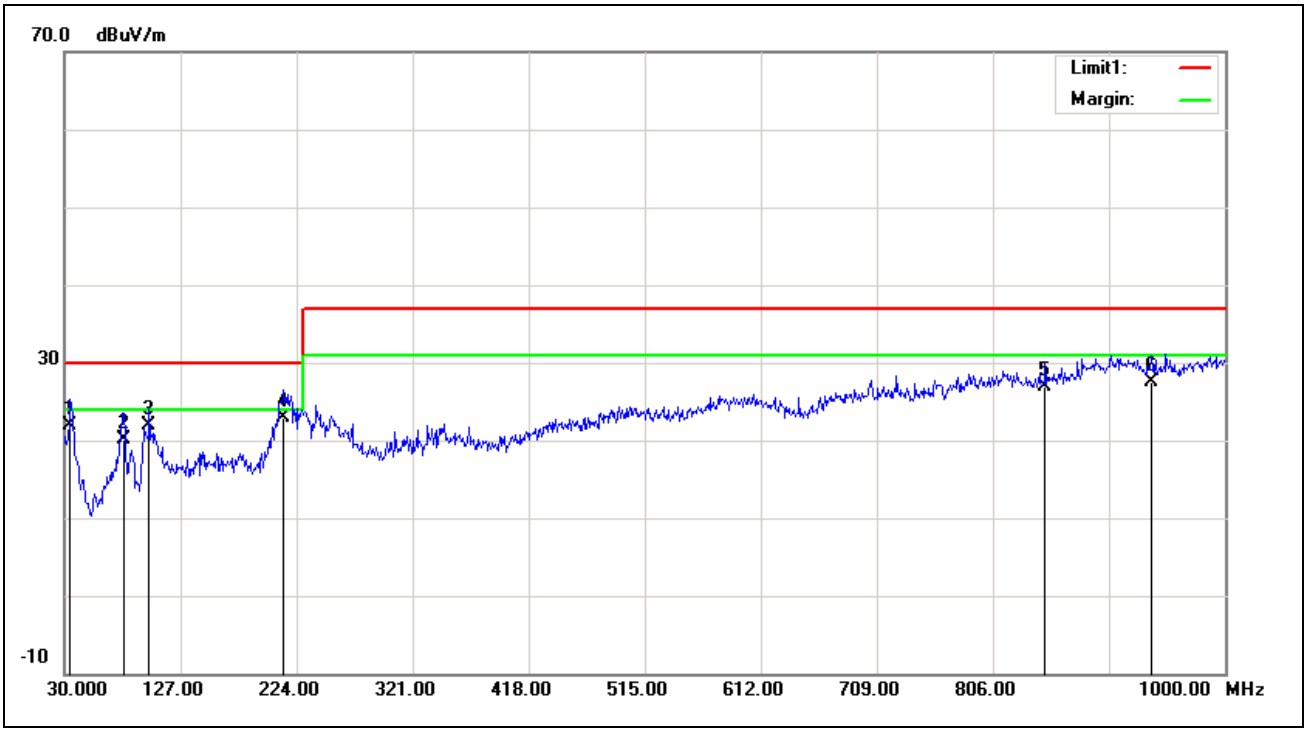
Job No.:	C180611E01	Ant.Polar.:	Horizontal
Standard:	EN 50121-3-2	Test Distance:	10m
Test item:	Radiation Test	Power:	DC 96V
Temp.(C)/Hum.(%RH):	26(C)/60%RH	Date:2018-7-6	Time:15:13:07
Company:	MEAN WELL	Test By:	King.Xu
Model:	DDR-240D-48	Description:	Mode 16



No.	Frequency	Reading	Correct	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)	
1	34.8500	30.33	-8.34	21.99	30.00	-8.01	400	147	QP
2	79.4700	36.22	-16.06	20.16	30.00	-9.84	400	348	QP
3	100.8100	34.47	-12.66	21.81	30.00	-8.19	400	86	QP
4	213.3300	34.38	-11.38	23.00	30.00	-7.00	400	271	QP
5	849.6500	25.83	0.99	26.82	37.00	-10.18	100	1	QP
6	938.8900	24.62	2.79	27.41	37.00	-9.59	100	165	QP

Note: 1. The other emission levels were very low against the limit.

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6.3. HARMONICS CURRENT MEASUREMENT

6.3.1. LIMITS OF HARMONICS CURRENT MEASUREMENT

Limits for Class A equipment	
Harmonics Order n	Max. permissible harmonics current A
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
15<=n<=39	0.15x15/n
Even harmonics	
2	1.08
4	0.43
6	0.30
8<=n<=40	0.23x8/n

Limits for Class D equipment		
Harmonics Order n	Max. permissible harmonics current per watt mA/W	Max. permissible harmonics current A
Odd Harmonics only		
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13	0.30	0.21
15<=n<=39	3.85/n	0.15x15/n

NOTE: 1. Class A and Class D are classified according to item 7.4.3.

2. According to section 7 of EN 61000-3-2, the above limits for all equipment except for lighting 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.

6.3.2. TEST INSTRUMENTS

Power Harmonics & Voltage Fluctuation and Flicker					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Harmonic & Flicker Tester	SCHAFFNER	CCN 1000-1	72585	10/31/2017	10/30/2018
AC Power Source	SCHAFFNER	NSG 1007	54788	10/31/2017	10/30/2018

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Required.

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6.3.3. TEST PROCEDURE

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.

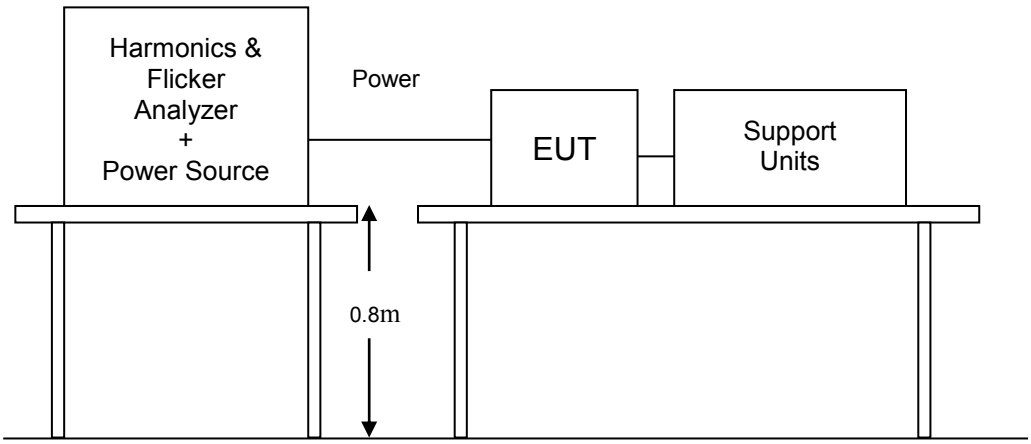
The classification of EUT is according to section 5 of EN 61000-3-2.

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: Lighting 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.

6.3.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.3.5. TEST RESULTS

Power Consumption	N/A	**Test Results**	N/A
Environmental Conditions	N/A	**Limits**	N/A
Test Mode	N/A	**Tested by**	N/A

Note: The EUT is DC supply, so the test item needn't performance.

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6.4. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

6.4.1. LIMITS OF VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

The following limits apply:

- the value of Pst shall not be greater than 1,0;
- the value of Plt shall not be greater than 0,65;
- the value of d(t) during a voltage change shall not exceed 3,3 % for more than 500 ms;
- the relative steady-state voltage change, dc, shall not exceed 3,3 %;
- the maximum relative voltage change, dmax, shall not exceed;

a) 4 % without additional conditions;

b) 6 % for equipment which is:

- switched manually, or
- switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

NOTE The cycling frequency will be further limited by the Pst and Plt limit.

For example: a dmax of 6 % producing a rectangular voltage change characteristic twice per hour will give a Plt of about 0.65.

c) 7 % for equipment which is:

- attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
- switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

Pst and Plt requirements shall not be applied to voltage changes caused by manual switching.

6.4.2. TEST INSTRUMENTS

Power Harmonics & Voltage Fluctuation and Flicker					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Harmonic & Flicker Tester	SCHAFFNER	CCN 1000-1	72585	10/31/2017	10/30/2018
AC Power Source	SCHAFFNER	NSG 1007	54788	10/31/2017	10/30/2018

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Required.

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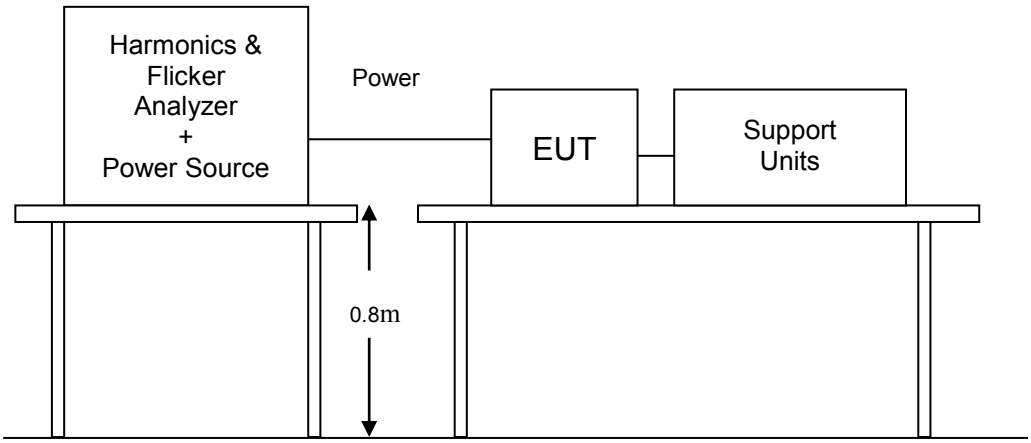
6.4.3. TEST PROCEDURE

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.

6.4.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.4.5. TEST RESULTS

Observation Period (Tp)	N/A	**Test Mode**	N/A
Environmental Conditions	N/A	**Tested by**	N/A

Note: The EUT is DC supply, so the test item needn't performance.

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7 IMMUNITY TEST

7.1. GENERAL DESCRIPTION

Product Standard	EN50121-3-2:2015	
	Test Type	Minimum Requirement
Basic Standard, Specification, and Performance Criterion required	EN 61000-4-2	Electrostatic Discharge – ESD: 8kV air discharge, 6kV Contact discharge, Performance Criterion B
	EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test – RS: 80 ~800 MHz, 20V/m, 80% AM(1kHz), 800 ~ 1000 MHz, 20V/m, 80% AM(1kHz), 1400 ~ 2000 MHz, 10V/m, 80% AM(1kHz), 2000 ~ 2700 MHz, 5V/m, 80% AM(1kHz), 5100 ~ 6000 MHz, 3V/m, 80% AM(1kHz), Performance Criterion A
	EN 61000-4-4	Electrical Fast Transient/Burst - EFT, Battery referenced ports and AC Power Port: 2kV Signal/Control Port: 2kV, Performance Criterion A
	EN 61000-4-5	Surge Immunity Test: 1.2/50 μs Open Circuit Voltage, 8 /20 μs Short Circuit Current, Battery referenced ports and AC Power Port: Line to line: 1kV, Line to ground: 2kV Performance Criterion B
	EN 61000-4-6	Conducted Radio Frequency Disturbances Test – CS, Battery referenced ports and AC Power Port: 0.15 ~ 80 MHz, 10Vrms, 80% AM, 1kHz, Signal Ports and Telecommunication Ports: 0.15 ~ 80 MHz, 10Vrms, 80% AM, 1kHz, Performance Criterion A

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7.2. GENERAL PERFORMANCE CRITERIA DESCRIPTION

Criteria A:	The apparatus shell continues 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 apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the manufacturer does not specify the minimum performance level or the permissible performance loss, 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.
Criteria B:	After test, the apparatus shell continues to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomenon below a performance level specified by the manufacturer, when the apparatus 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. However, no change of operating state if stored data is allowed to persist after the test. If the manufacturer does not specify the minimum performance level or the permissible performance loss, 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.
Criteria C:	Temporary loss of function is allowed, provided the functions is self-recoverable or can be restored by the operation of controls by the user in accordance with the manufacturer instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

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7.3. ELECTROSTATIC DISCHARGE (ESD)

7.3.1. TEST SPECIFICATION

Basic Standard:	IEC 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Discharge Voltage:	Air Discharge: 2 ; 4 ; 8 KV (Direct) Contact Discharge: 2 ; 4; 6 KV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: minimum 10 times at each test point for each polarity Contact Discharge: minimum 200 times, 100 each at negative and positive polarity
Discharge Mode:	Single Discharge 1 second minimum

7.3.2. TEST INSTRUMENT

Electrostatic Discharge					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
ESD Simulator	EM TEST	DITO 509030	V0936105118	02/27/2018	02/26/2019

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Required.

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7.3.3. TEST PROCEDURE

The discharges shall be applied in two ways:

a) Contact discharges to the conductive surfaces and coupling planes:

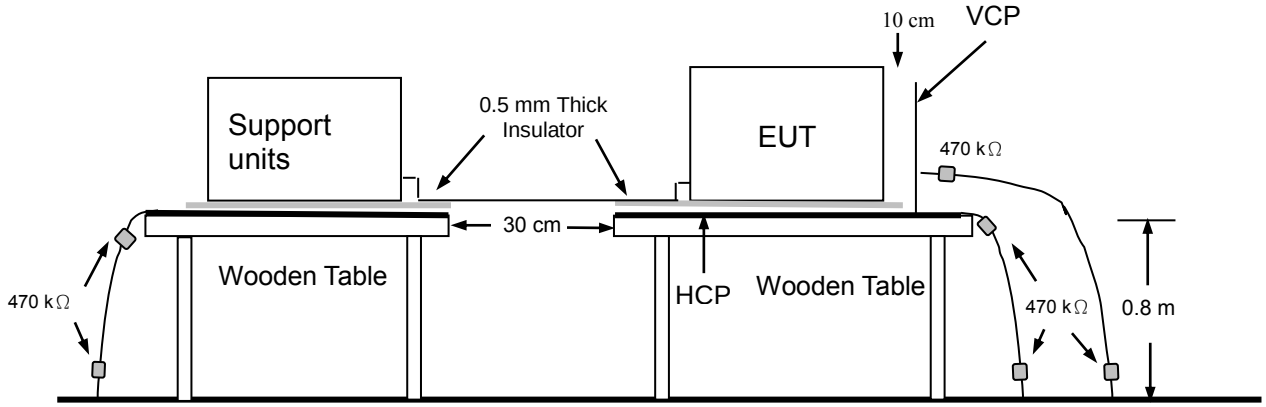
The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the **H**orizontal **C**oupling **P**lane (**HCP**). The remaining three test points shall each receive at least 50 direct contact discharges. If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.

b) Air discharges at slots and apertures and insulating surfaces:

On those parts of the EUT where it is not possible to perform contact discharge testing, the equipment should be investigated to identify user accessible points where breakdown may occur. Such points are tested using the air discharge method. This investigation should be restricted to those area normally handled by the user. A minimum of 10 single air discharges shall be applied to the selected test point for each such area.

The basic test procedure was in accordance with EN 61000-4-2:

a) The EUT was located 0.1 m minimum from all side of the **HCP** (dimensions 1.6m x 0.8m).
b) The support units were located another table 30 cm away from the EUT, but direct support unit was/were located at same location as EUT on the HCP and keep at a distance of 10 cm with EUT.
c) The time interval between two successive single discharges was at least 1 second.
d) Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
e) Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
f) At least ten single discharges (in the most sensitive polarity) were applied at the front edge of each **HCP** opposite the center point of each unit of the EUT and 0.1 meters from the front of the EUT. The long axis of the discharge electrode was in the plane of the **HCP** and perpendicular to its front edge during the discharge.
g) At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the **V**ertical **C**oupling **P**lane (**VCP**) in sufficiently different positions that the four faces of the EUT were completely illuminated. The **VCP** (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the EUT.



Ground Reference Plane

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7.3.4. TEST SETUP

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

NOTE:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the **G**round **R**eference **P**lane. 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 **H**orizontal **C**oupling **P**lane (1.6m x 0.8m) was placed on the table and attached to the **GRP** by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of EN 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 EN 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.

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7.3.5. TEST RESULTS

Temperature	22ºC	**Humidity**	43% RH
Pressure	1017mbar	**Tested By**	Tony.qi
Test Mode	Mode 1	**Date of Test**	2018-6-23
Required Passing Performance		**Criterion B**	

Air Discharge						
Test Points	**Test Levels**					
	± 2 KV	**± 4 KV**	**± 8 KV**	**± 15 KV**	**Performance Criterion**	**Results**
8-13	☒	☒	☒	☐	**A**	**Pass**

Contact Discharge						
Test Points	**Test Levels**					
	± 2 KV	**± 4 KV**	**± 6 KV**	**± 8 KV**	**Performance Criterion**	**Results**
HCP	☒	☒	☒	☐	**A**	**Pass**
VCP	☒	☒	☒	☐	**A**	**Pass**
1-7	☒	☒	☒	☐	**A**	**Pass**
14-16	☒	☒	☒	☐	**A**	**Pass**

Performance Criterion :
A : There was no change compared with initial operation during and after the test.
No unintentional response was found during the test.
B : Performance degradation or loss of function part during the test, but can self-recover .

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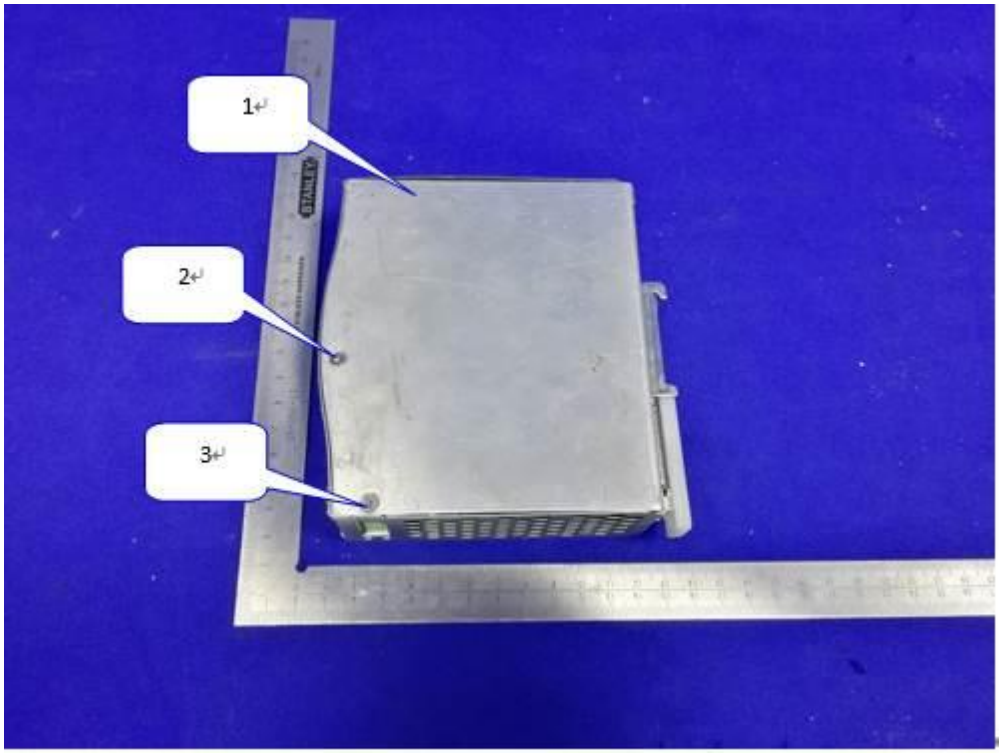
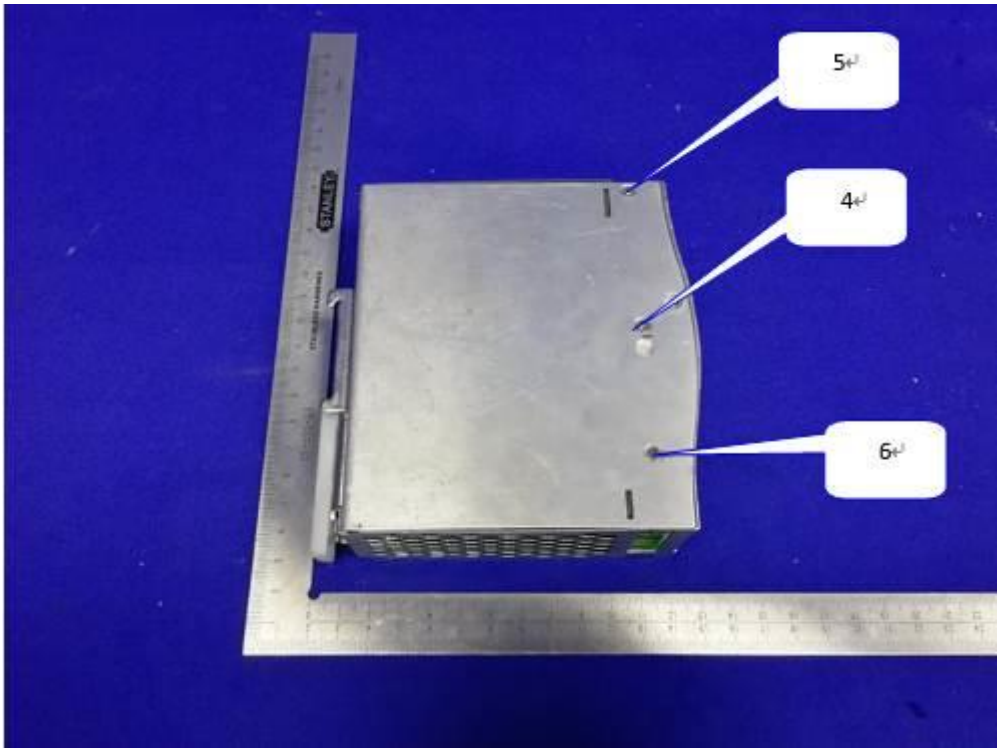
The Photo for Discharge Points of EUT





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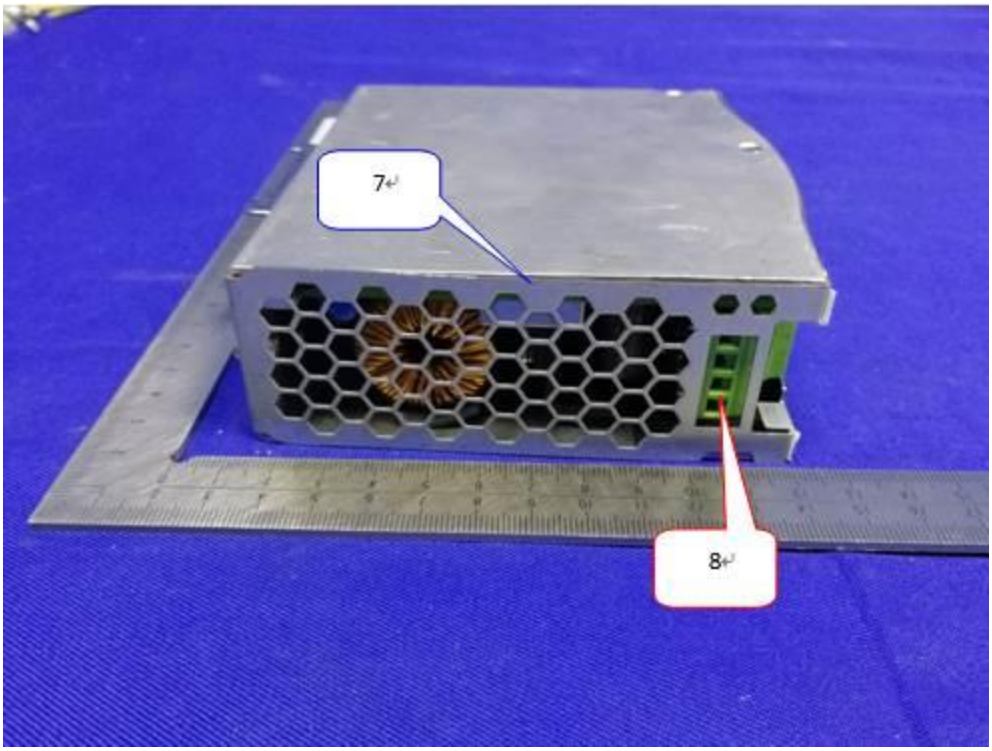

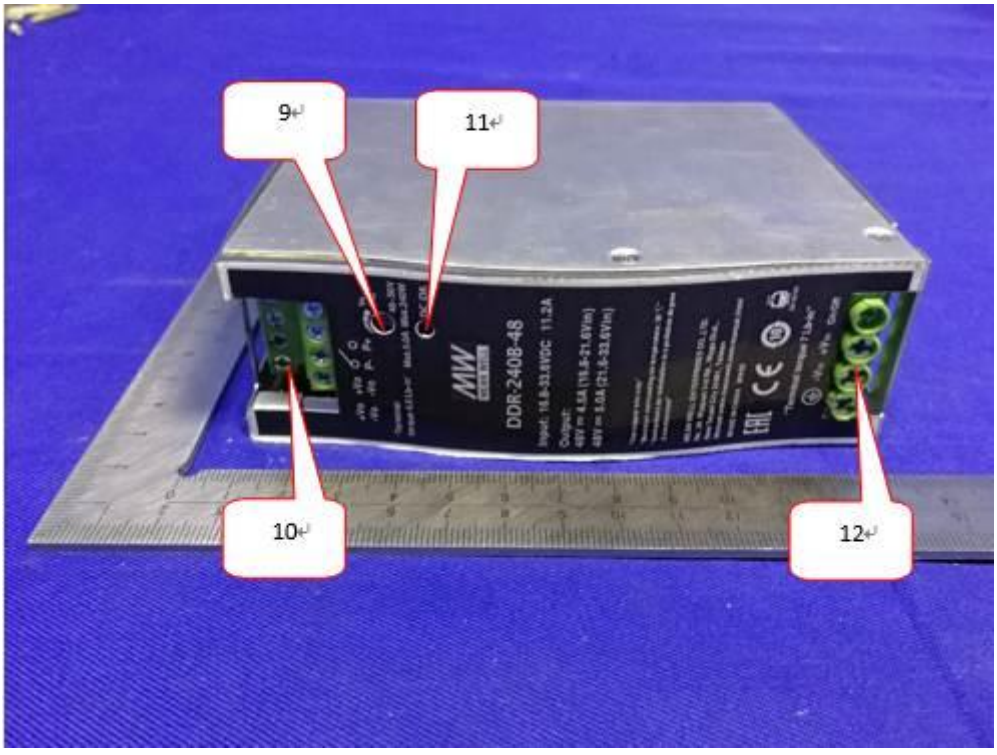

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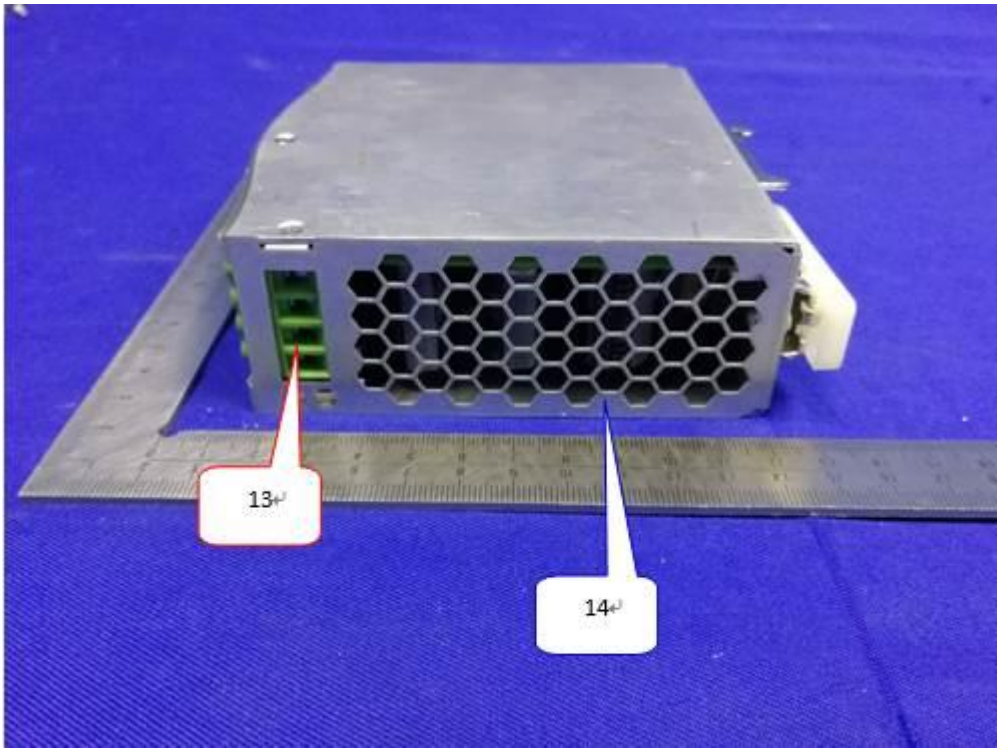

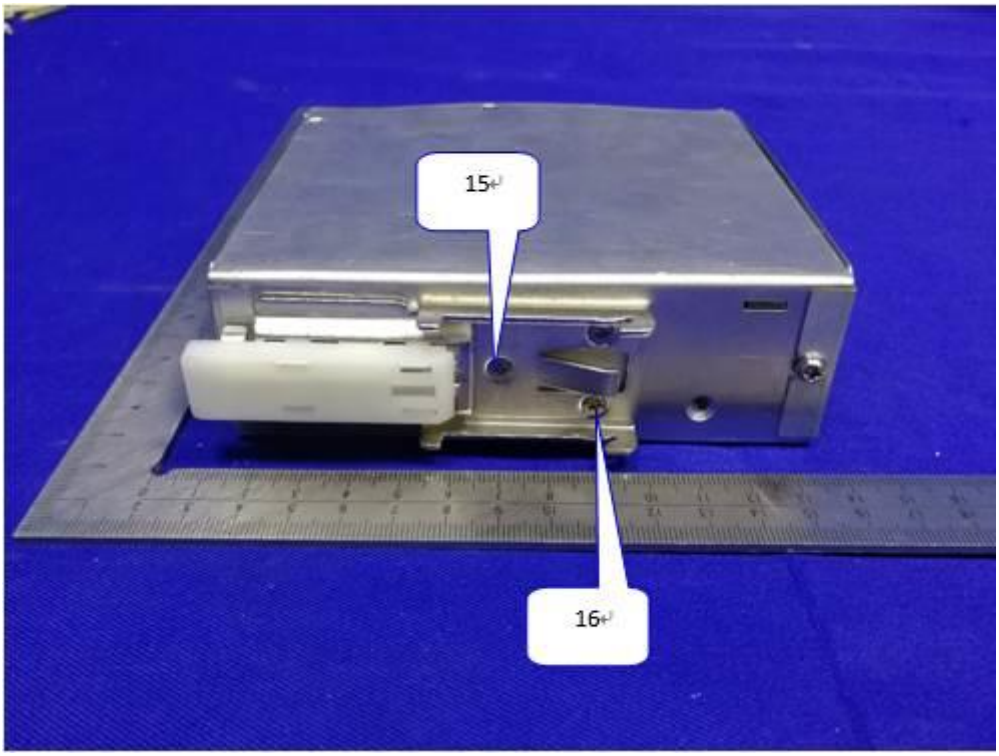

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7.4. RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD (RS)

7.4.1. TEST SPECIFICATION

Basic Standard:	IEC 61000-4-3
Frequency Range:	80 MHz ~800 MHz; 800 ~ 1000 MHz; 1400 ~ 2000 MHz; 2000 ~ 2700 MHz; 5100 ~ 6000 MHz
Field Strength:	20V/m;20V/m;10V/m; 5V/m;3V/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

7.4.2. TEST INSTRUMENT

Radiated susceptibility					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
E-Field Sensor	AR Worldwide	FL7006 100K-6G	0342390	05/03/2018	05/02/2019
Amplifier Research (80~1000MHz 150w)	AR Worldwide	150W1000M1	320947	N.C.R	N.C.R
Amplifier Research (1~6GHz 50w)	AR Worldwide	50S1G6M1	0342706	N.C.R	N.C.R
Dual Directional Coupler (1-11G)	AR Worldwide	C1-A47NFNF 35dB	001	N.C.R	N.C.R
Dual Directional Coupler (80~1000MHz 400w)	AR Worldwide	DC6180	302211	N.C.R	N.C.R
RF POWER METER	BOONTON	4232A-01	1614	02/26/2018	02/25/2019
POWER SENSOR	BOONTON	51011-EMC	34149	02/26/2018	02/25/2019
POWER SENSOR	BOONTON	51011A-EMC	36351	07/20/2017	07/19/2018
Antenna	AR Worldwide	TP1000A	302624	N.C.R	N.C.R
Laser probe interface	AR Worldwide	F1700	0342390	05/03/2018	05/02/2019
Synthesized Signal Generator	AGILENT	83732B	US37101915	02/26/2018	02/25/2019

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Required.

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7.4.3. TEST PROCEDURE

The test procedure was in accordance with EN 61000-4-3

a) The testing was performed in a fully anechoic chamber. The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters.

b) All the scanning conditions are as follows:

Condition of Test	Remarks
1. Field Strength	20 V/m
2. Radiated Signal	AM80% Modulated with 1kHz
3. Scanning Frequency	80MHz - 1000MHz
4. Dwell Time	3 Seconds
5. Frequency step size △ f:	1%
6. The rate of Swept of Frequency	1.5×10^{-3} decades/s

c) The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.

d) The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

e) In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

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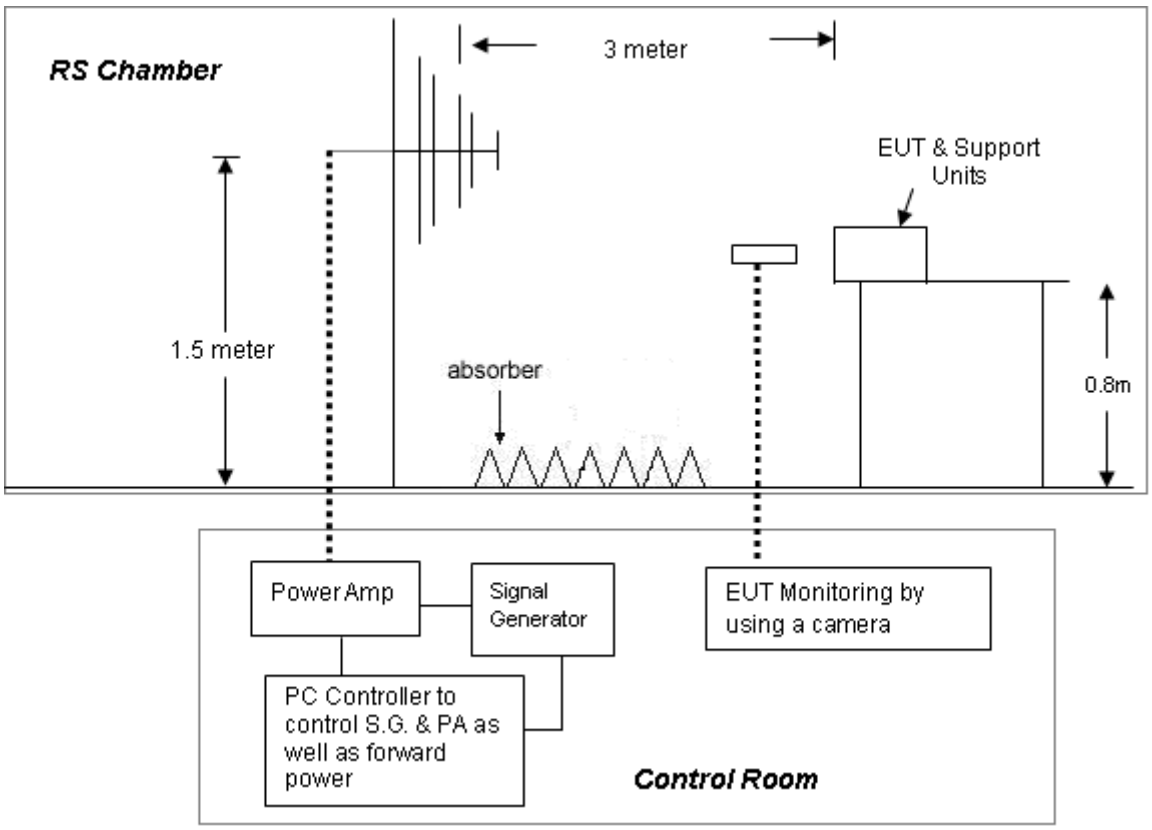
7.4.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

NOTE:

TABLETOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

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7.4.5. TEST RESULTS

Temperature	22ºC	**Humidity**	48% RH
Pressure	1017mbar	**Dwell Time**	3 sec.
Test Mode	Mode 1	**Date of Test**	2018-6-24
Tested By	Tony.qi	**Required Passing Performance**	**Criterion A**

Frequency (MHz)	Polarity	Azimuth	Field Strength (V/m)	Performance Criterion	Result
80 ~ 1000	V&H	0	20	**A**	**Pass**
80 ~ 1000	V&H	90	20	**A**	**Pass**
80 ~ 1000	V&H	180	20	**A**	**Pass**
80 ~ 1000	V&H	270	20	**A**	**Pass**
1400 ~ 2000	V&H	0	10	**A**	**Pass**
1400 ~ 2000	V&H	90	10	**A**	**Pass**
1400 ~ 2000	V&H	180	10	**A**	**Pass**
1400 ~ 2000	V&H	270	10	**A**	**Pass**
2000 ~ 2700	V&H	0	5	**A**	**Pass**
2000 ~ 2700	V&H	90	5	**A**	**Pass**
2000 ~ 2700	V&H	180	5	**A**	**Pass**
2000 ~ 2700	V&H	270	5	**A**	**Pass**
5100 ~ 6000	V&H	0	3	**A**	**Pass**
5100 ~ 6000	V&H	90	3	**A**	**Pass**
5100 ~ 6000	V&H	180	3	**A**	**Pass**
5100 ~ 6000	V&H	270	3	**A**	**Pass**

Performance Criterion :
A : There was no change compared with initial operation during the test.

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7.5. ELECTRICAL FAST TRANSIENT (EFT)

7.5.1. TEST SPECIFICATION

Basic Standard:	IEC 61000-4-4
Test Voltage:	Battery referenced ports and AC Power Port: 2KV Signal Ports and Telecommunication Ports: 2KV
Polarity:	Positive & Negative
Impulse Frequency:	5 kHz
Impulse Wave-shape:	5/50 ns
Burst Duration:	15 ms
Burst Period:	300 ms
Test Duration:	Not less than 1 min.

7.5.2. TEST INSTRUMENT

Electrical fast transient/burst					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
EMC Immunity Tester	EMC PARTNER	TRA2006	TRA2006_F-S-T-D-R-1503	02/26/2018	02/25/2019
Coupling Network	EMC PARTNER	CN-EFT1000	CN-EFT1000_1535	02/26/2018	02/25/2019

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Required.

7.5.3. TEST PROCEDURE

a) The EUT is placed on a table that is 0.8 meter height. A ground reference plane is placed on the table, and uses a 0.1m insulation between the EUT and ground reference plane. The minimum area of the ground reference plane is 1m*1m, and 0.65mm thick min, and projected beyond the EUT by at least 0.1m on all sides.

b) Test on I/O and communication ports:

The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 1minute.

c) Test on power supply ports:

The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.

Each of the Line and Neutral conductors is impressed with burst noise for 1 minute. The length of the signal and power lines between the coupling device and the EUT is 0.5m.

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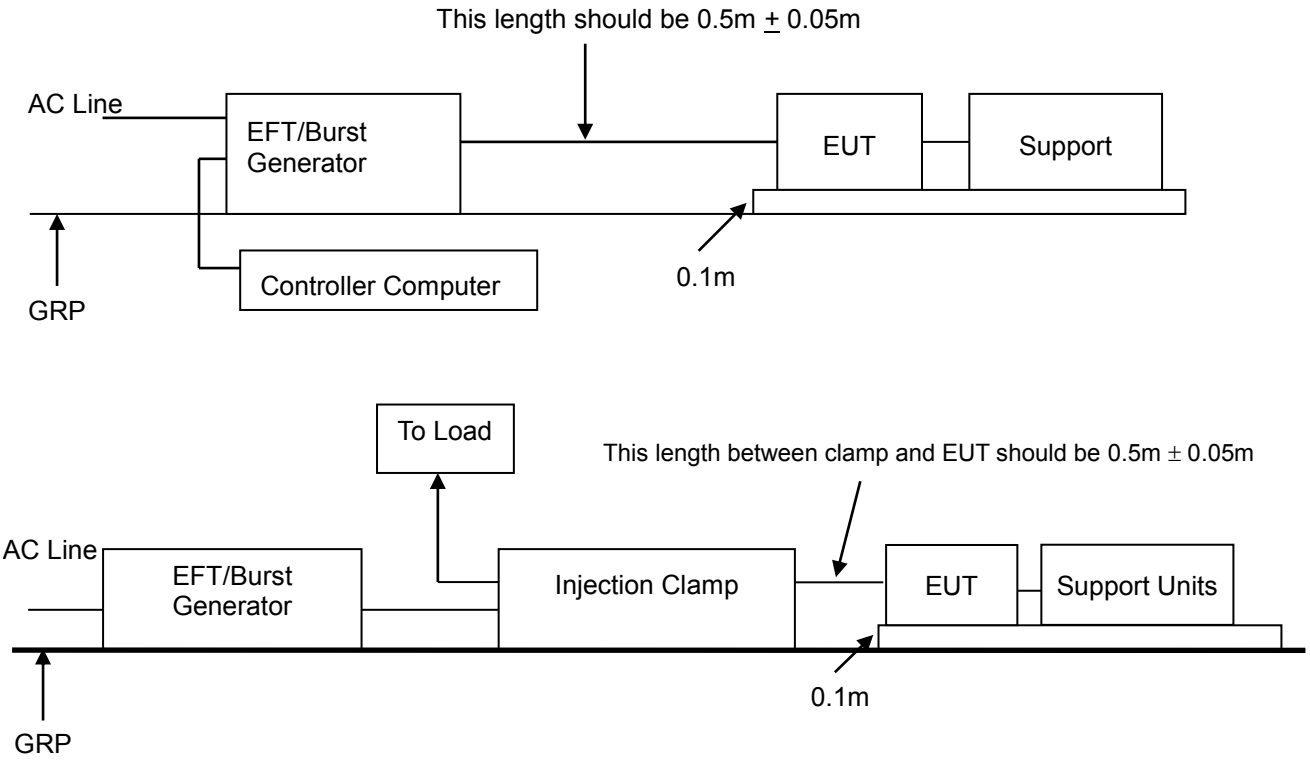
7.5.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

NOTE:

TABLETOP EQUIPMENT

The configuration consisted of a wooden table (0.1m high) standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system. A minimum distance of 0.5m was provided between the EUT and the walls of the laboratory or any other metallic structure.

FLOOR STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of EN 61000-4-4 and its cables, were isolated from the Ground Reference Plane by an insulating support that is 0.1-meter thick. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system.

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7.5.5. TEST RESULTS

Temperature	21°C	Humidity	48% RH
Pressure	1017mbar	Tested By	Tony.qi
Test Mode	Mode 1	Date of Test	2018-6-25
Required Passing Performance		Criterion B	

Test Point	Polarity	Test Level(KV)	Performance Criterion	Result
L(+)	+/-	2	**A**	**Pass**
N(-)	+/-	2	**A**	**Pass**
PE	+/-	2	**A**	**Pass**
L(+)+N(-)	+/-	2	**A**	**Pass**
L(+)+PE	+/-	2	**A**	**Pass**
N(-)+PE	+/-	2	**A**	**Pass**
L(+)+N(-)+PE	+/-	2	**A**	**Pass**

Performance Criterion :
A : There was no change compared with initial operation during the test.
B : Performance degradation or loss of function part during the test, but can self-recover .

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7.6. SURGE IMMUNITY TEST

7.6.1. TEST SPECIFICATION

Basic Standard:	IEC 61000-4-5
Wave-Shape:	For Power port: Combination Wave 1.2/50 μs Open Circuit Voltage 8/20 μs Short Circuit Current
Test Voltage:	Battery referenced ports and AC Power Port : line to line: 1KV, line to ground: 2KV
Surge Input/Output:	AC Power Line: L-N / L-PE / N-PE Telecommunication line: T-Ground / R-Ground
Generator Source Impedance:	2 ohm between networks 12 ohm between network and ground
Polarity:	Positive/Negative
Phase Angle:	0° / 90° / 180° / 270°
Pulse Repetition Rate:	1 time / min. (maximum)
Number of Tests:	5 positive and 5 negative at selected points

7.6.2. TEST INSTRUMENT

Surge					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
EMC Immunity Tester	EMC PARTNER	TRA2006	F-S-T-D-R-1503	02/26/2018	02/25/2019
Coupling and Decoupling Network	EMC PARTNER	CDN-UTP8	1511	12/27/2017	12/26/2018

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Required.

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7.6.3. TEST PROCEDURE

a) For EUT power supply:

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.

b) For test applied to unshielded un-symmetrically operated interconnection lines of EUT:

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.

c) For test applied to unshielded symmetrically operated interconnection / telecommunication lines of EUT:

The surge was applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor were not specified. The interconnection line between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

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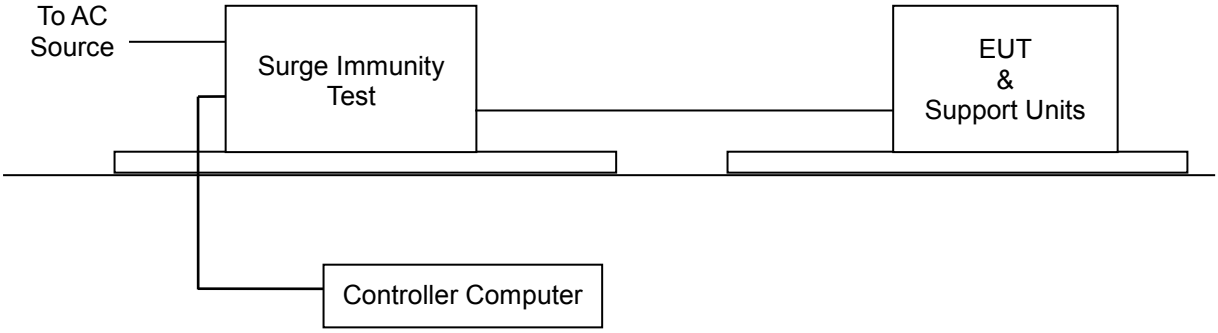
7.6.4. TEST SETUP

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



7.6.5. TEST RESULTS

Temperature	21ºC	**Humidity**	48% RH
Pressure	1017mbar	**Tested By**	Tony.qi
Test Mode	Mode 1	**Date of Test**	2018-6-26
Required Passing Performance		**Criterion B**	

Test Point	Polarity	Test Level (KV)	Performance Criterion	Result
L(+) – N(-)	+/-	0.5/2	**A**	**Pass**
L(+) – PE	+/-	0.5/2	**A**	**Pass**
N(-) – PE	+/-	0.5/2	**A**	**Pass**

Performance Criterion :
A : There was no change compared with initial operation during the test.
B : Performance degradation or loss of function part during the test, but can self-recover .
C : The function stopped during the test, but can be recoverable manually after the test.

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7.7. CONDUCTED RADIO FREQUENCY DISTURBANCES (CS)

7.7.1. TEST SPECIFICATION

Basic Standard:	IEC 61000-4-6
Frequency Range:	0.15 MHz ~ 80 MHz
Field Strength:	Battery referenced ports and AC Power Port: 10Vrms
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of preceding frequency value
Coupled cable:	Power Mains, Unshielded; RJ45 Line, Unshielded
Coupling device:	CDN- M316 (3 wires)

7.7.2. TEST INSTRUMENT

Conducted susceptibility					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
RF Generator	SCHAFFNER	NSG2070	1042	02/26/2018	02/25/2019
EM-Koppelzange	SCHAFFNER	KEMZ 801	17629	09/04/2017	09/03/2018
Attenuator	EURO MC	7860 ORGEVAL	2226	09/04/2017	09/03/2018
CDN（Coupling and Decoupling Network)	SCHAFFNER	CDN M216	16399	09/04/2017	09/03/2018
CDN（Coupling and Decoupling Network)	SCHAFFNER	CDN M316	16939	04/25/2018	04/24/2019
CDN	TESEQ	CDN T2-10S	39812	04/25/2018	04/24/2019
CDN	TESEQ	CDN T4-10S	37195	04/25/2018	04/24/2019
CDN	TESEQ	CDN T8-10S	42002	02/26/2018	02/25/2019
Test System for Conducted and Radiated Immunity	TESEQ	NSG 4070B	44279	02/26/2018	02/25/2019
Amplifier	TESEQ	SCCXE75	U2060-0916	02/26/2018	02/25/2019
Current Clamp	TESEQ	IP-DR250	1609-1936	09/04/2017	09/03/2018

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Required.

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7.7.3. TEST PROCEDURE

a) The EUT are placed on a table that is 0.8 meter height, and a Ground reference plane on the table, EUT are placed upon table and use a 10cm insulation between the EUT and Ground reference plane. The test shell performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 50-ohm load resistor.

b) For Signal Ports and Telecommunication Ports

The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp device couples to the signal and Telecommunication lines of the EUT.

c) For Input DC and AC Power Ports

The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbances signal into EUT.

Used CDN-M2 for two wires or CDN-M3 for three wires.

d) All the scanning conditions are as follows:

Condition of Test	Remarks
1. Field Strength	140dBuV(10V) Level 3
2. Radiated Signal	AM 80% Modulated with 1kHz
3. Scanning Frequency	0.15MHz – 80MHz
4. Dwell Time	3 Seconds
5. Frequency step size ∆ f:	1%
6. The rate of Swept of Frequency	1.5 x 10^{-3} decades/s

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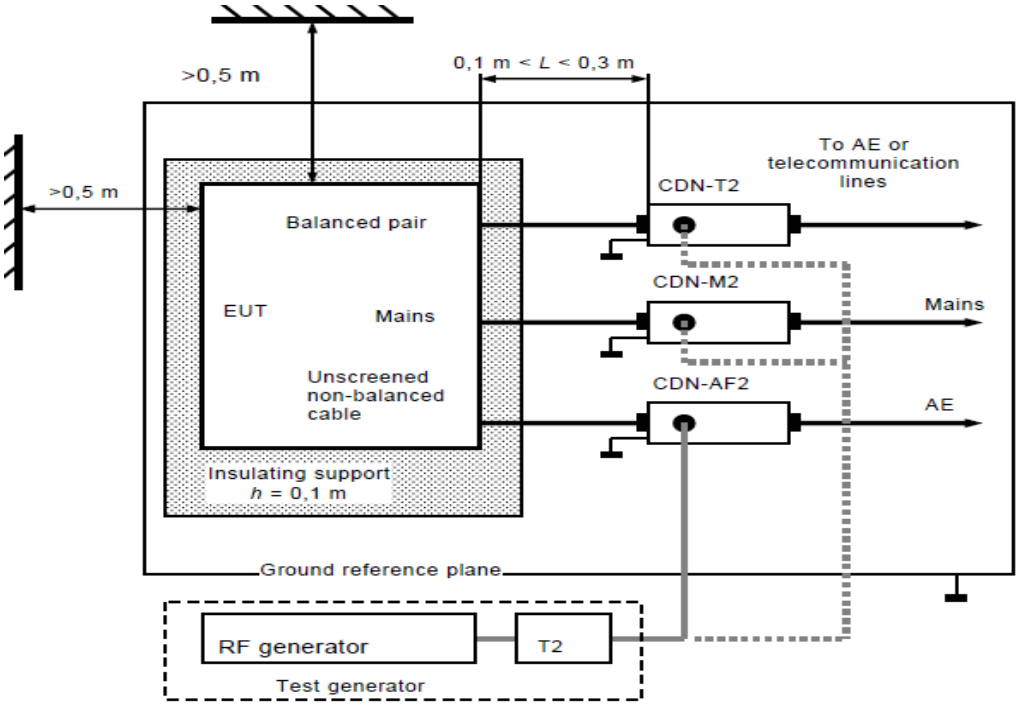
7.7.4. TEST SETUP



Note: 1. The EUT is setup 0.1m above Ground Reference Plane
2. The CDNs and / or EM clamp used for real test depends on ports and cables configuration of EUT.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

NOTE:
TABLE-TOP AND FLOOR-STANDING EQUIPMENT
The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

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7.7.5. TEST RESULTS

Temperature	21°C	Humidity	48% RH
Pressure	1013mbar	Tested By	Tony.qi
Test Mode	Mode 1	Date of Test	2018-6-25
Required Passing Performance		Criterion A	

Frequency Band (MHz)	Field Strength (Vrms)	Cable	Injection Method	Performance Criterion	Result
0.15 ~ 80	10	DC Power	CDN-M316	**A**	**Pass**

Performance Criterion:
A : There was no change compared with initial operation during the test.

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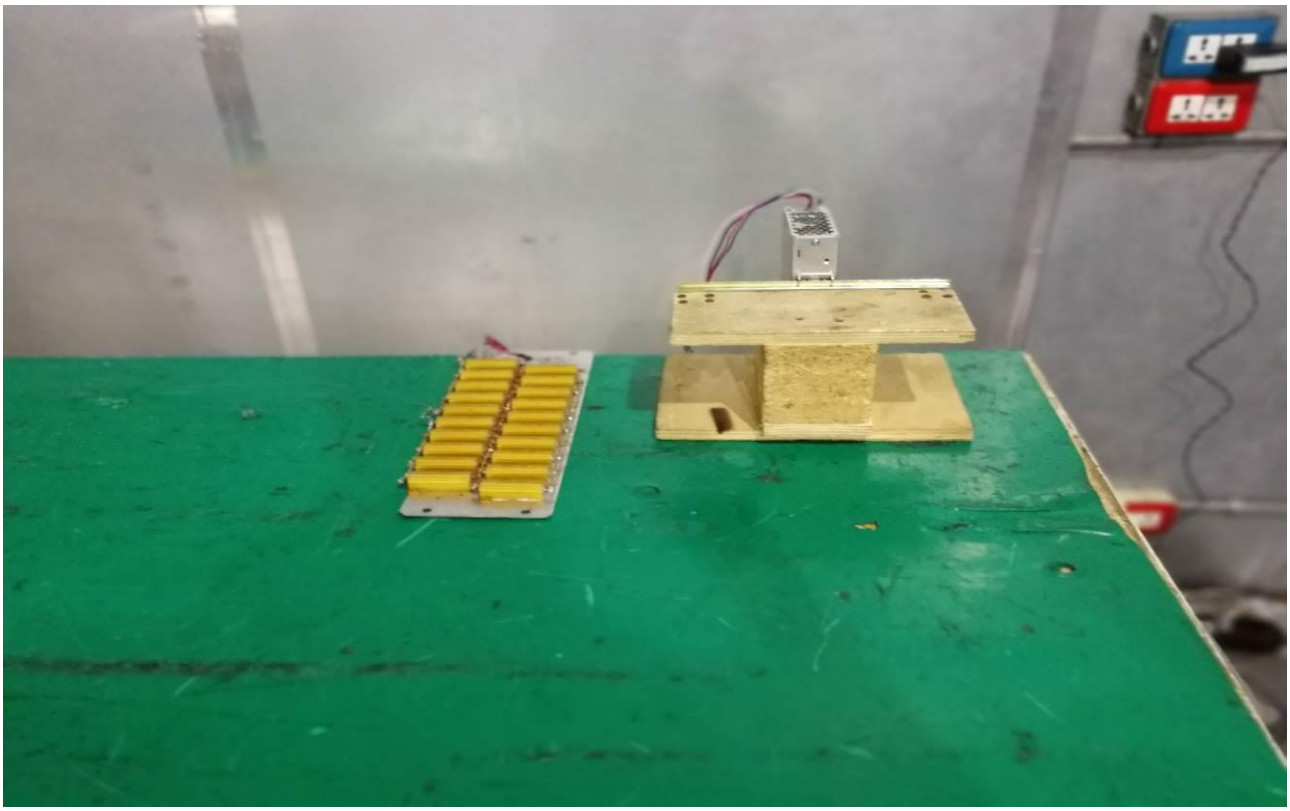
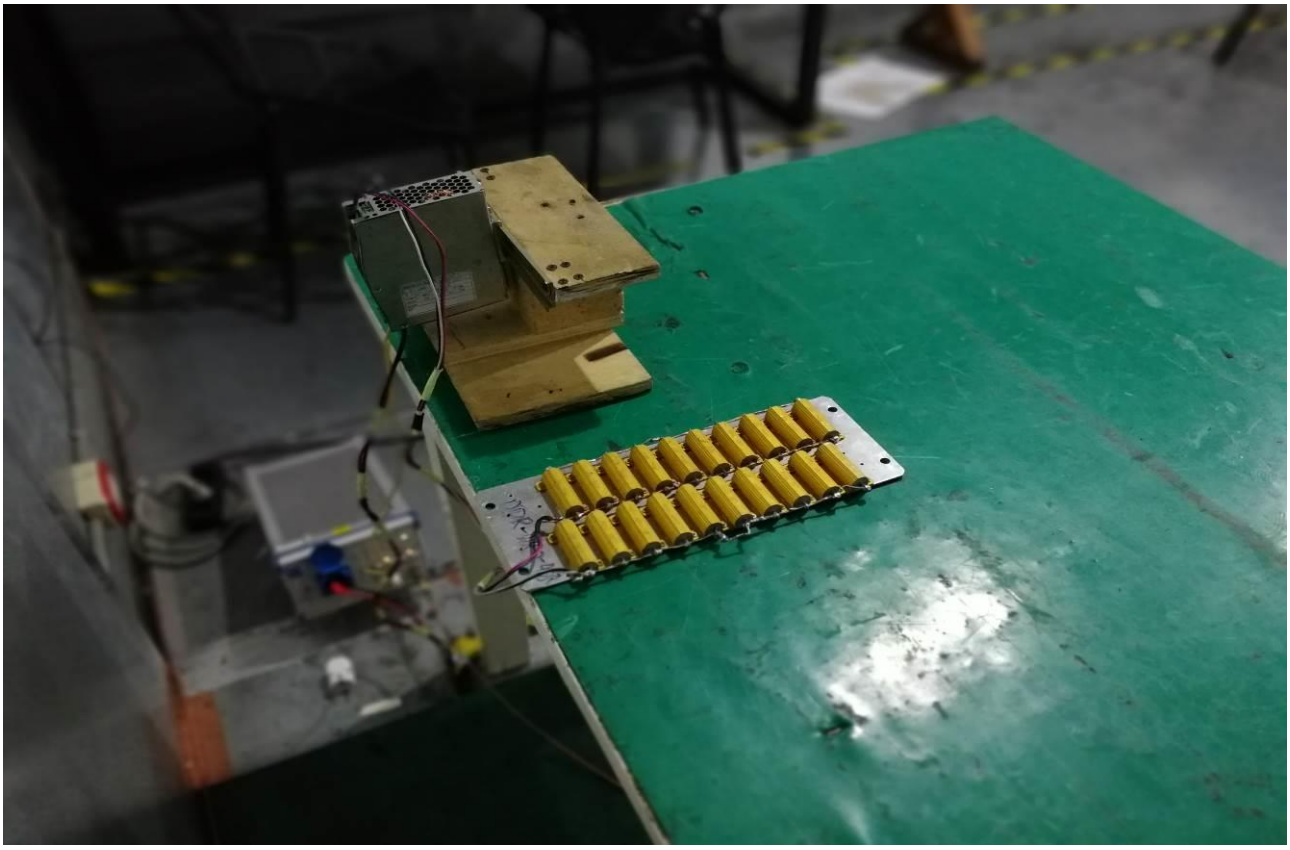
8 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST





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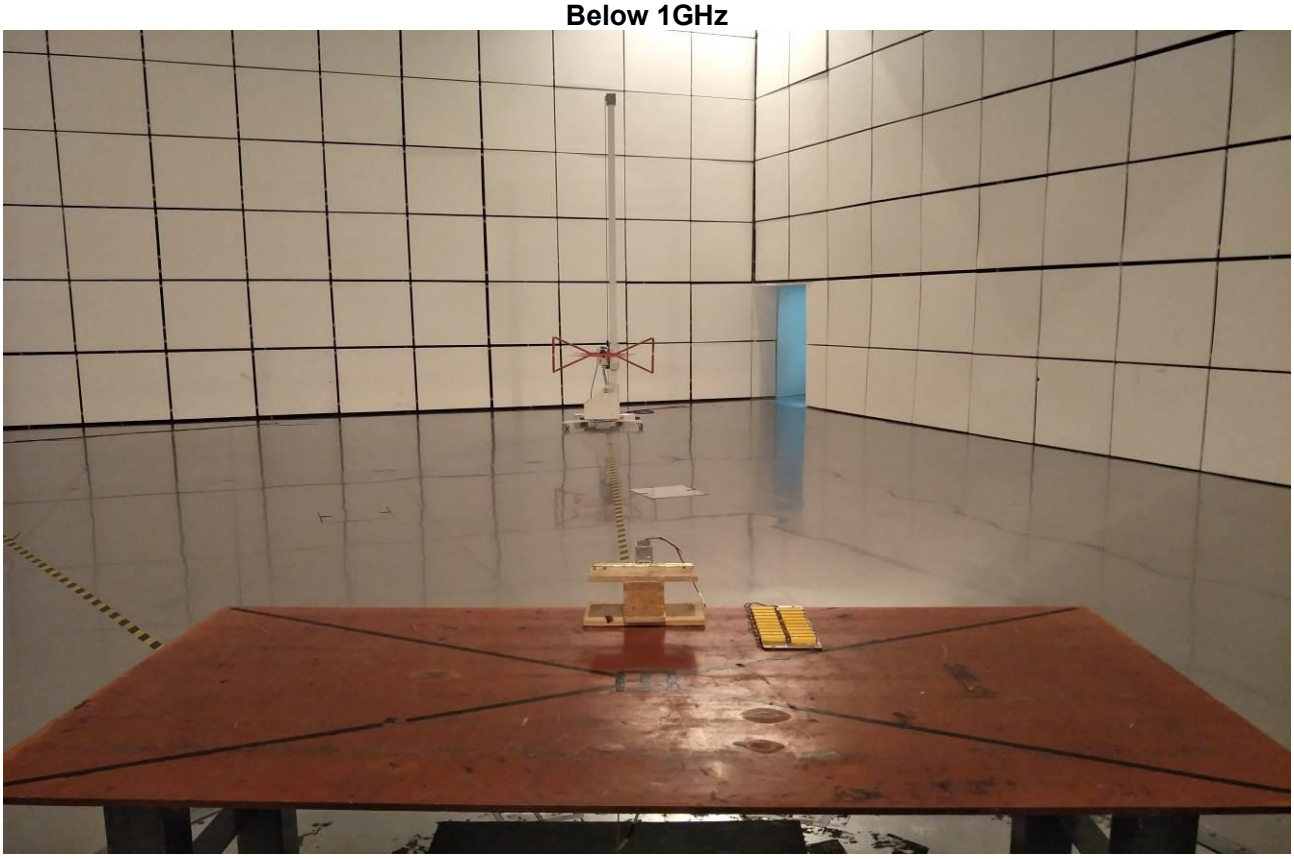
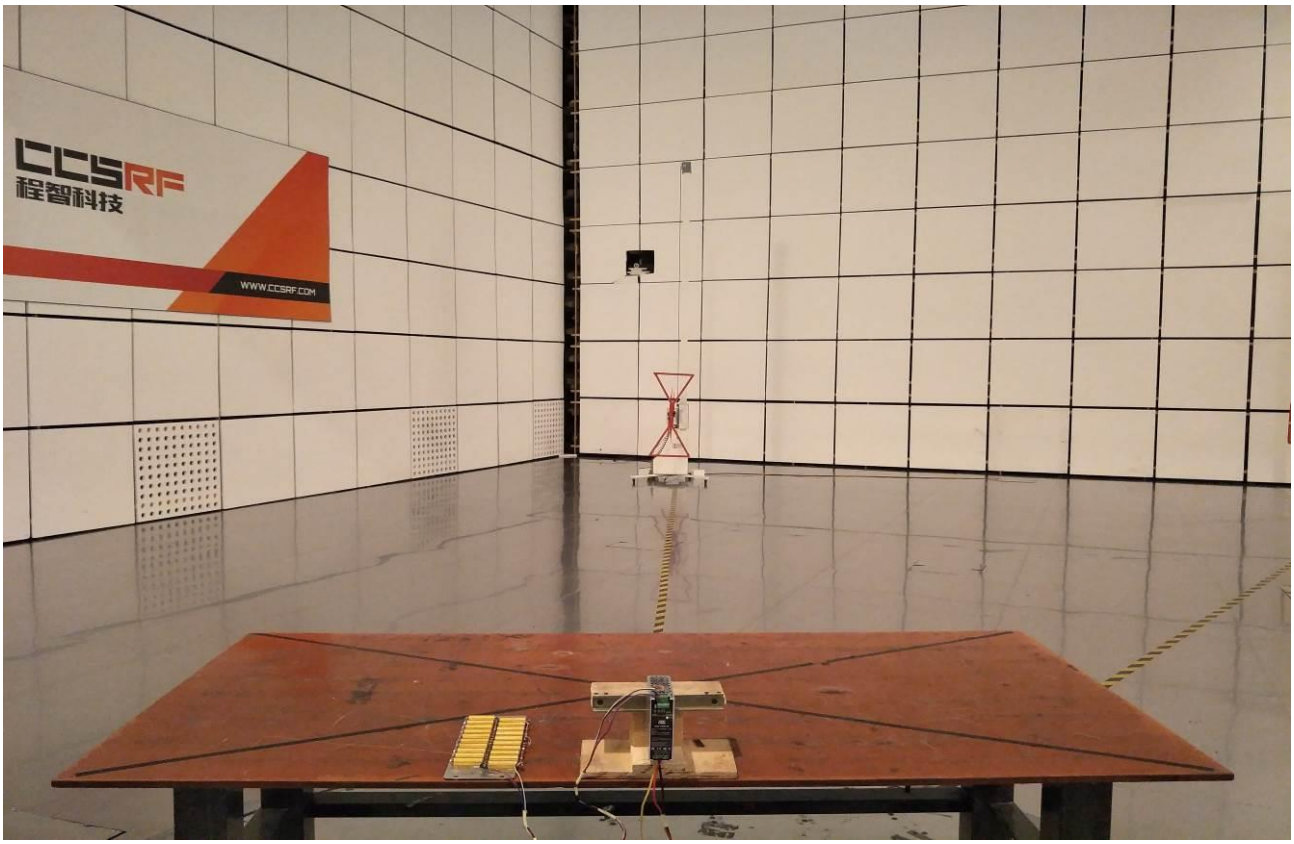
RADIATED EMISSION TEST
Below 1GHz





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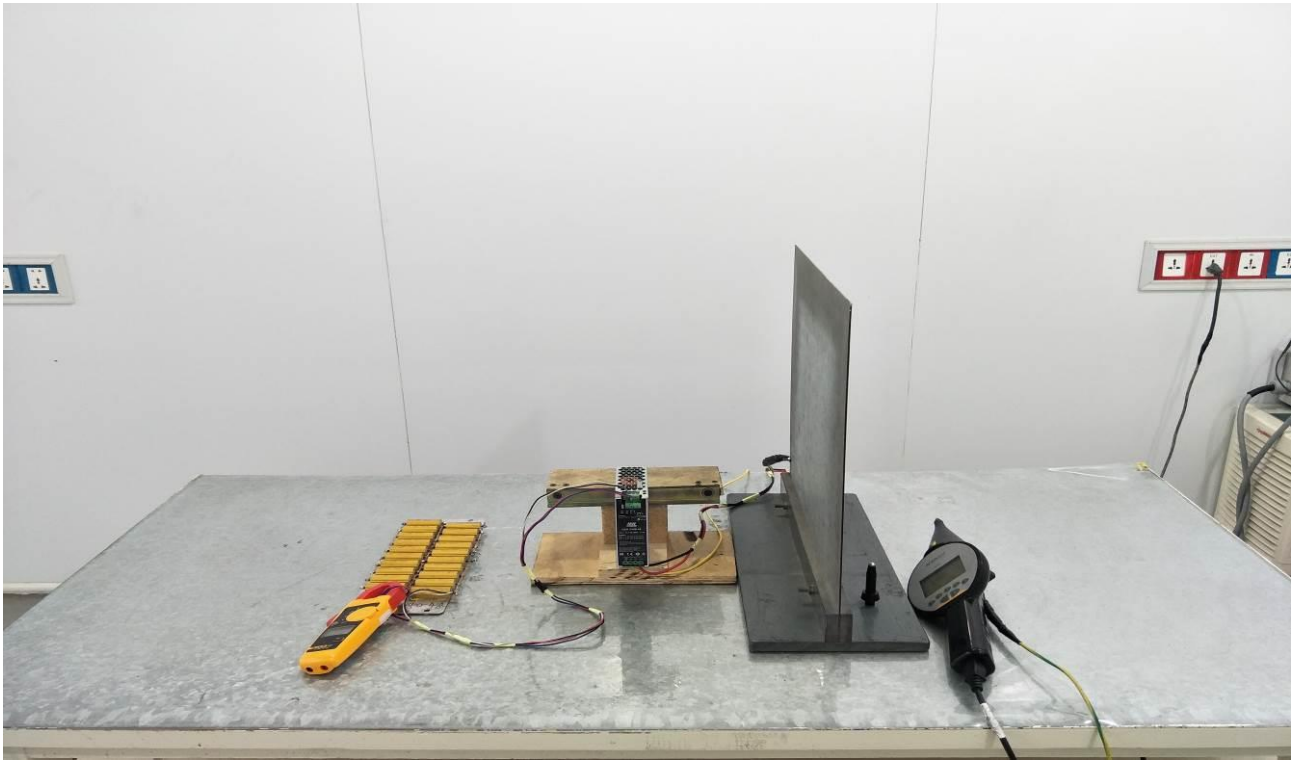
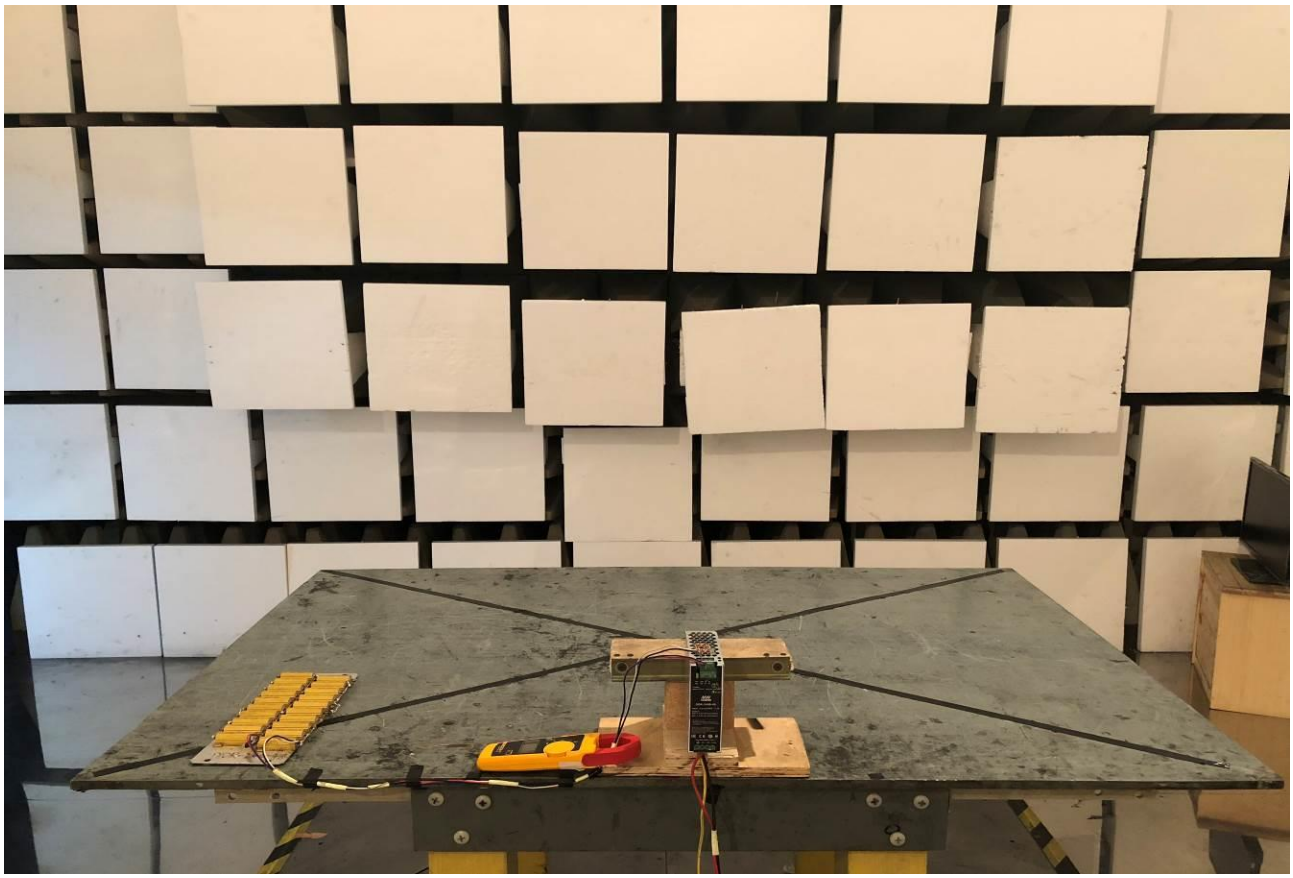
ESD TEST



RS TEST



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EFT TEST

SURGE TEST

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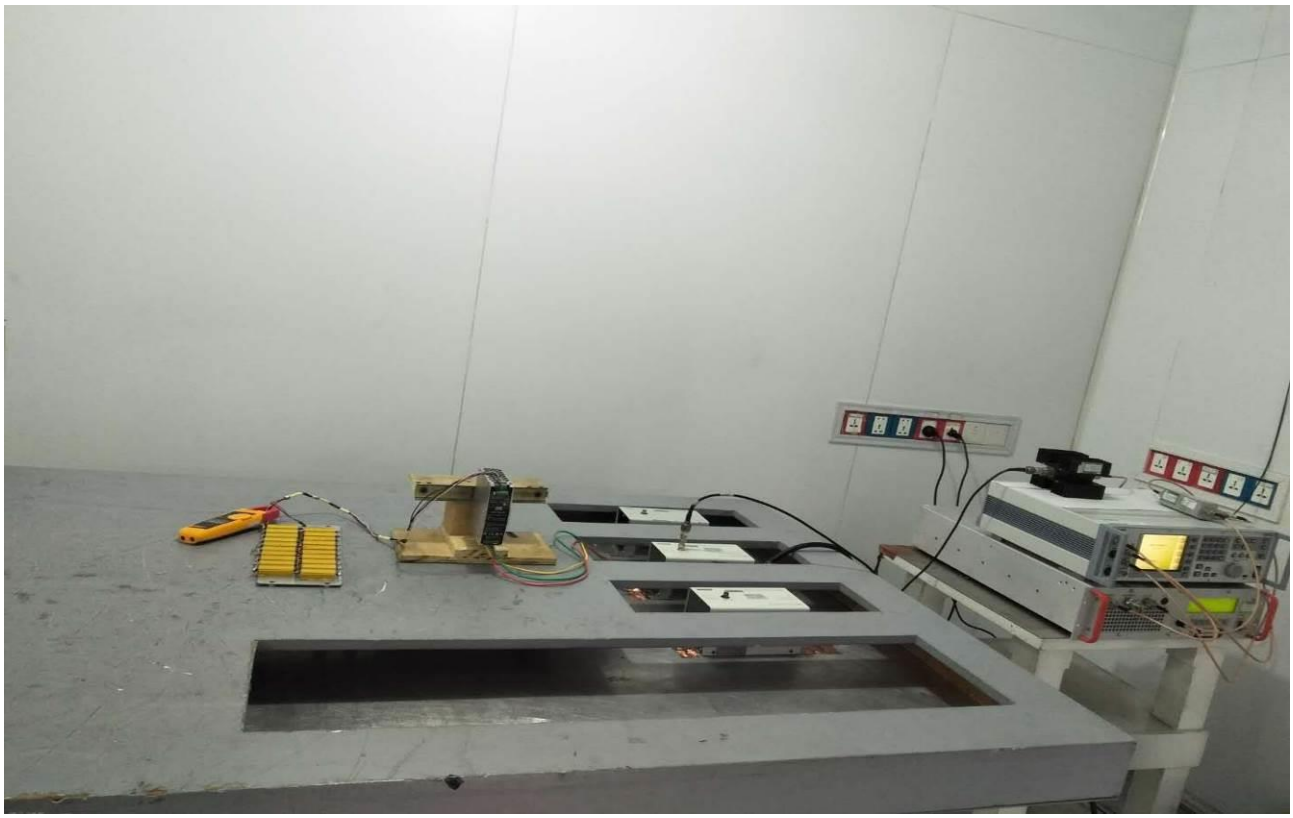
CS TEST



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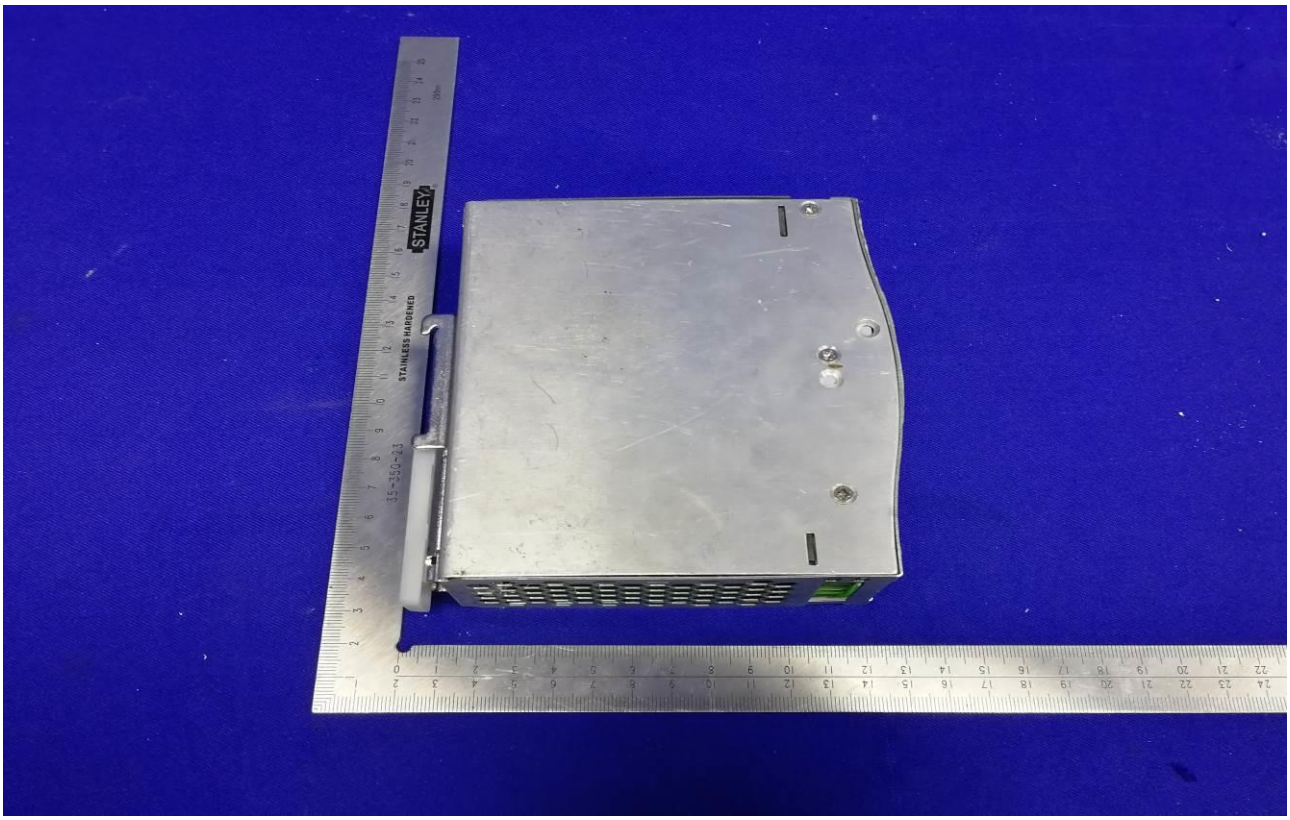
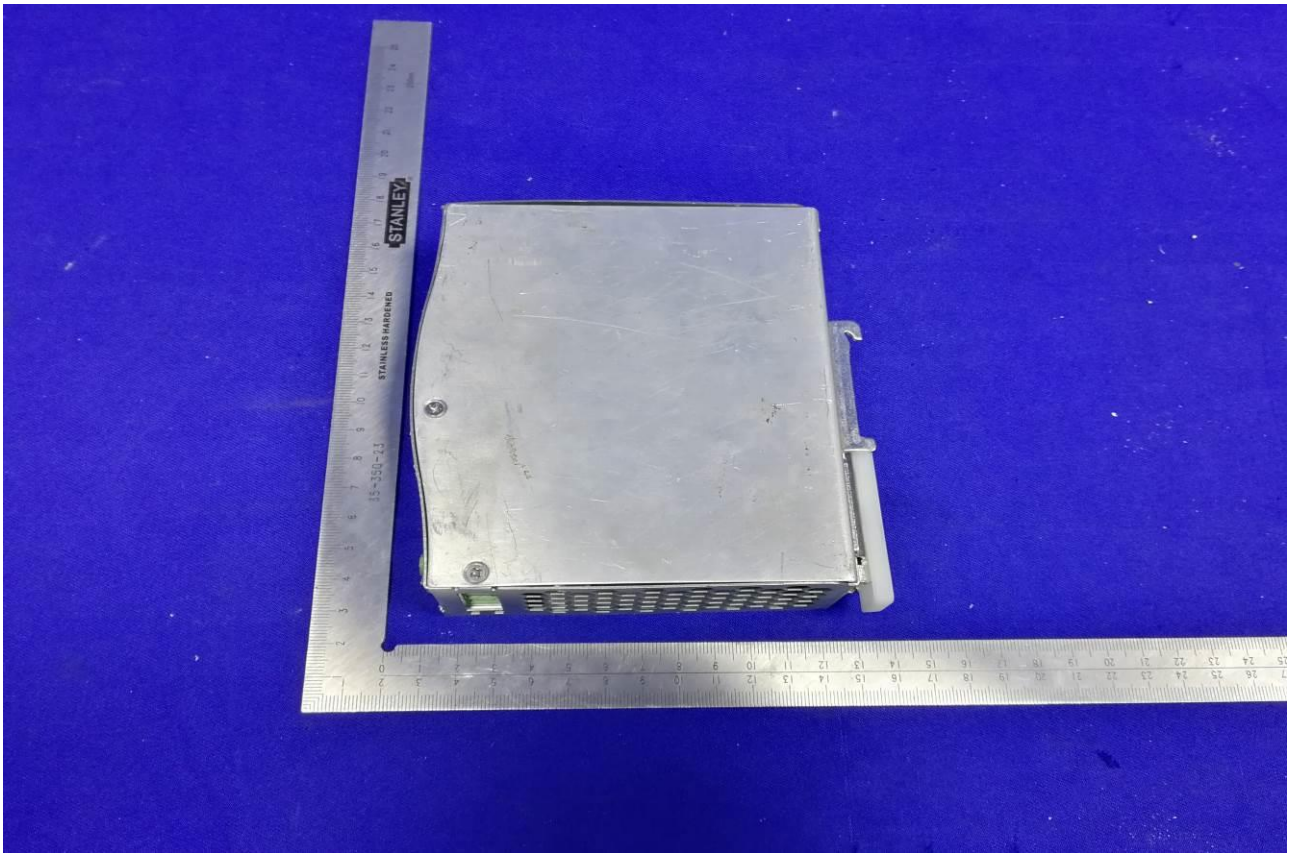
APPENDIX I - PHOTOGRAPHS OF EUT





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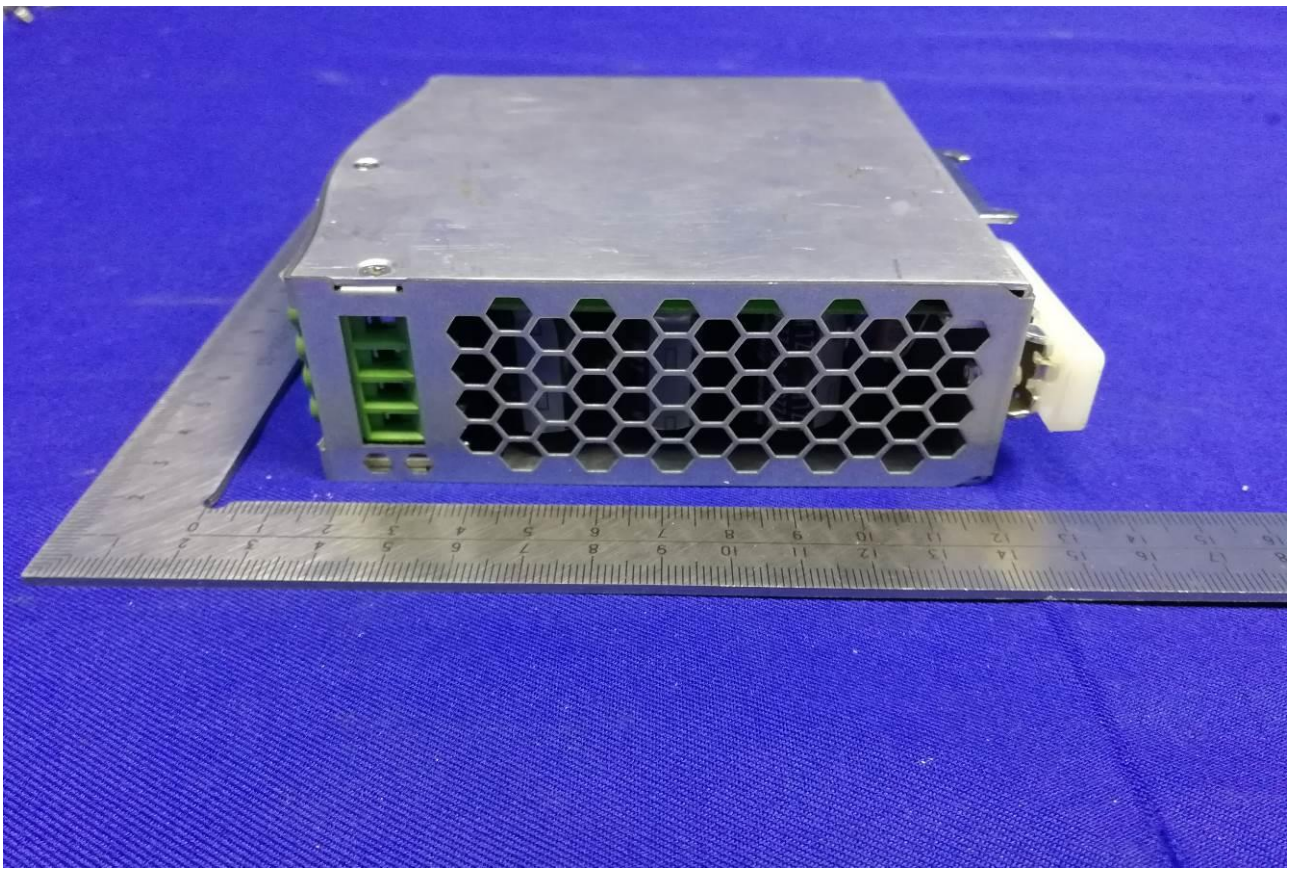

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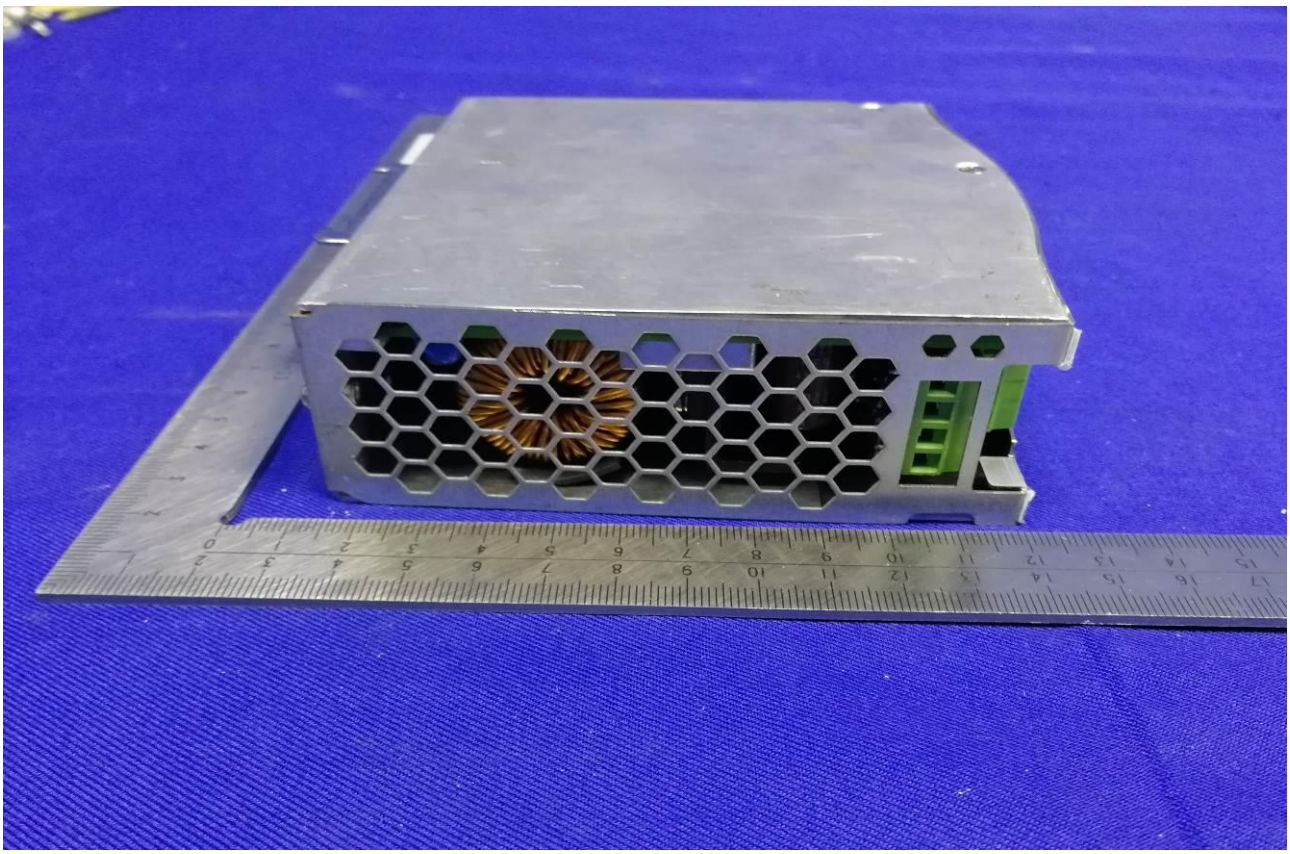

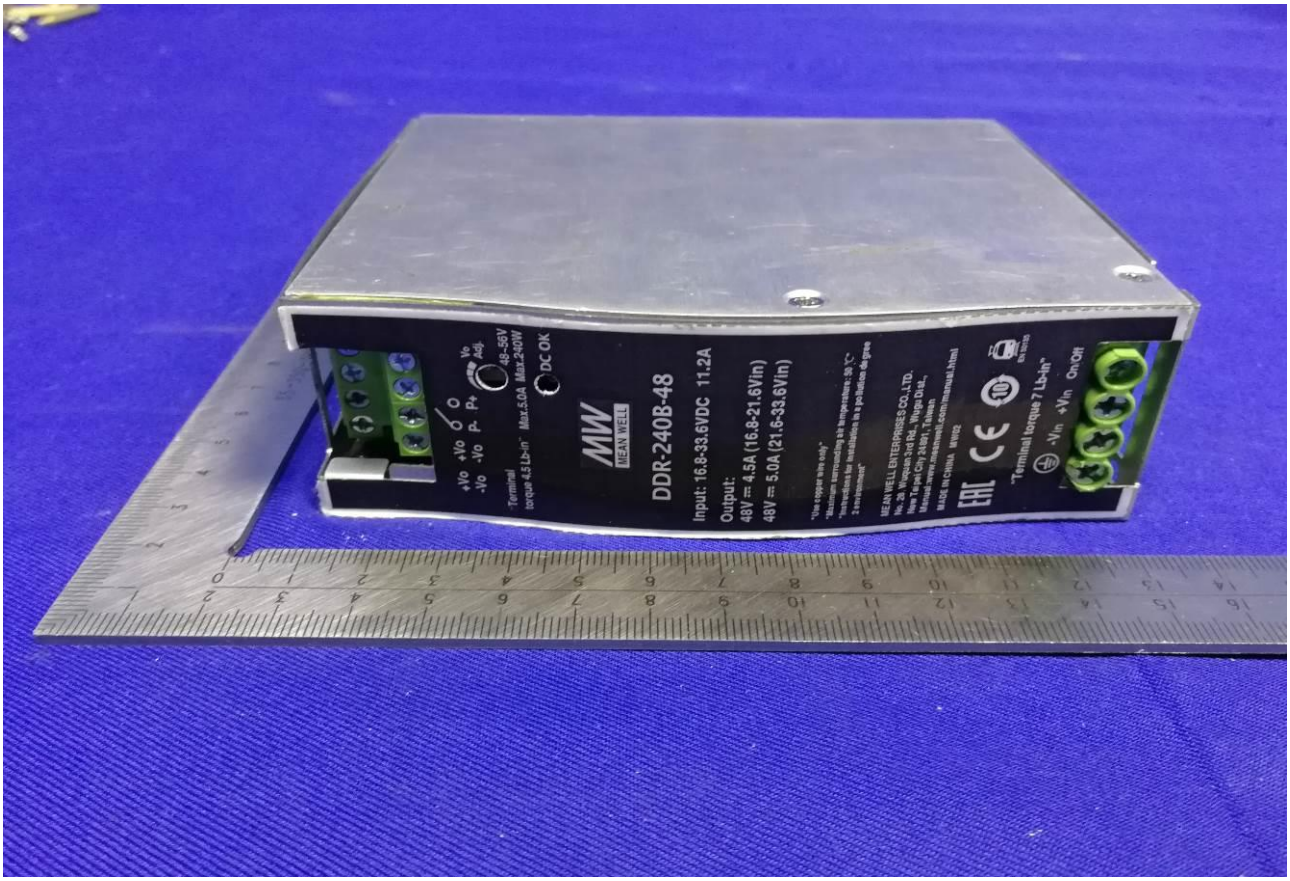

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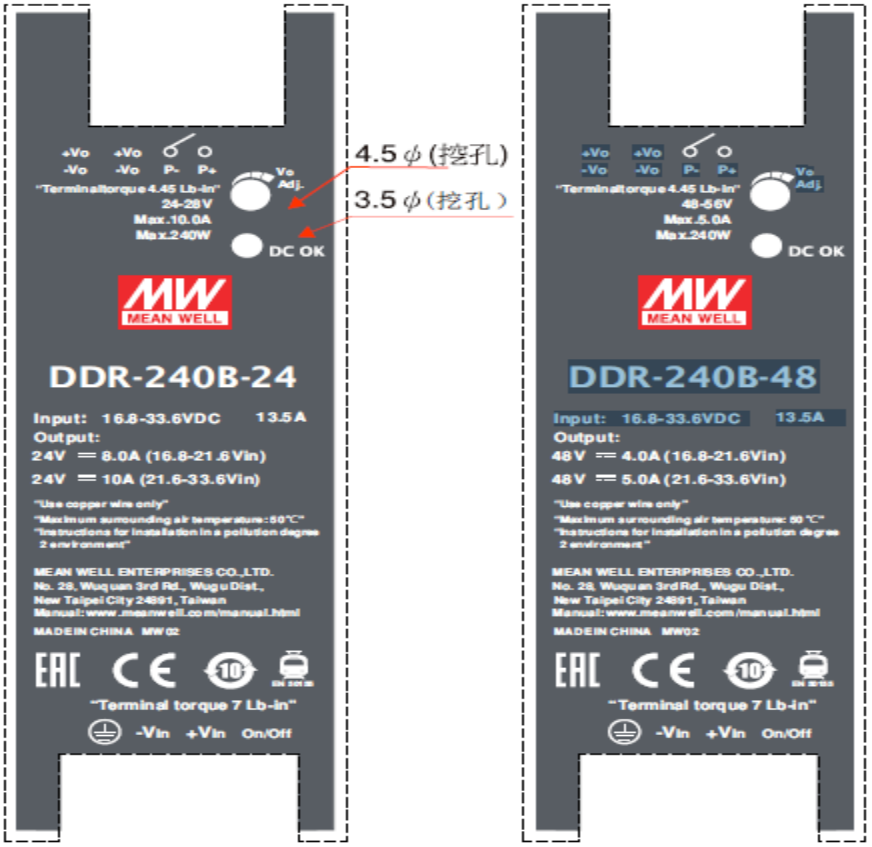

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