

X2Y EMI Filter Devices for Appliances

CISPR 14-1: was amended in November of 2008

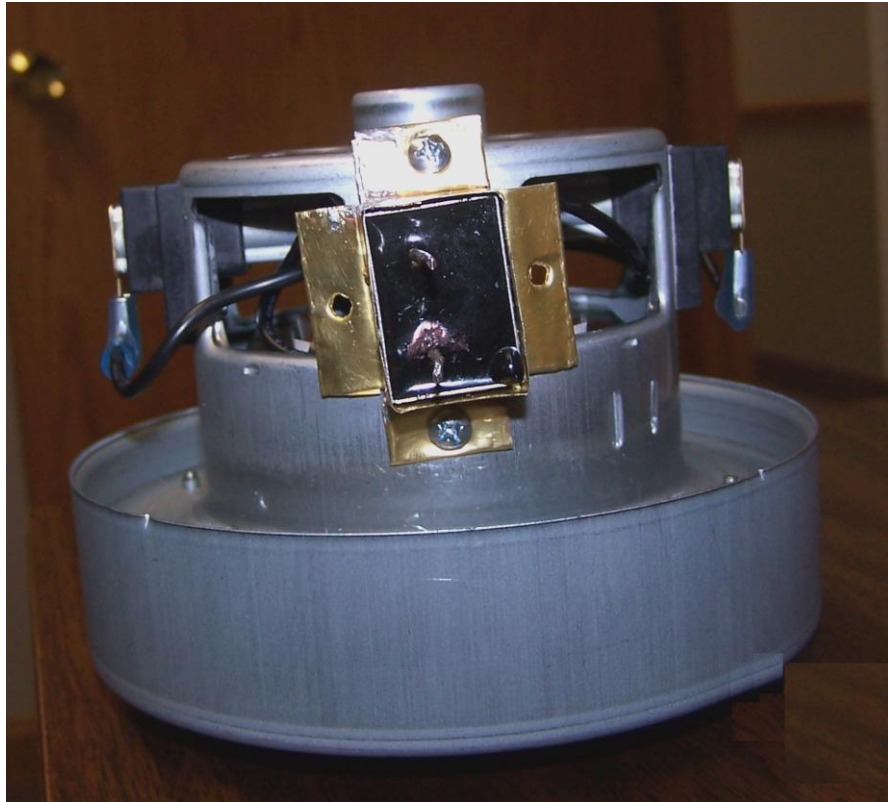
The amendment 2008-11 now specifies that to comply with the RE (radiated emissions) requirements products will have to meet the levels over the frequency range from 30 MHz to 1.0 GHz. Companies have until 2011 for all products to meet the new levels for all IEC countries.

A summary of the changes follows:

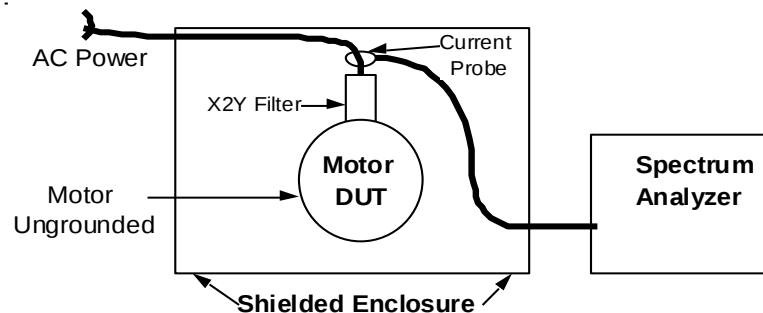
- The CISPR 14-1 amendment now specifies Radiated Emissions (RE) levels from 30 MHz to 1GHz. This amendment was issued in Nov of 2008 and requires that new products comply by 2011 for all IEC countries.
- The changes apply to the limits and the methods of measurement of radio disturbance characteristics of electrical motor-operated and thermal appliances for household and similar purposes, electric tools and electric apparatus.
- The scope of the specification has also changed and now applies to the conduction and the radiation of radio-frequency disturbances from appliances whose main functions are performed by motors and switching or regulating devices, unless the RF energy is intentionally generated or intended for illumination. Now included are the following non inclusive list of typical equipments: household electrical appliances, electric tools, regulating controls using semiconductor devices, motor-driven electro-medical apparatus, electric toys, automatic dispensing machines as well as cinema or slide projectors.

Companies working to meet product compliance by the 2011 deadline can use X2Y EMI filter devices to help electronic equipment can meet the new CISPR 14-1 specifications and lower filter costs.

The picture on the next page shows a vacuum cleaner motor prototyped with an X2Y filter device supplied by Maida Development Company. The X2Y filter is located on the outside of the motor housing for prototype testing, and would be located within the motor housing for optimum performance, yet the filter performance is still very good.

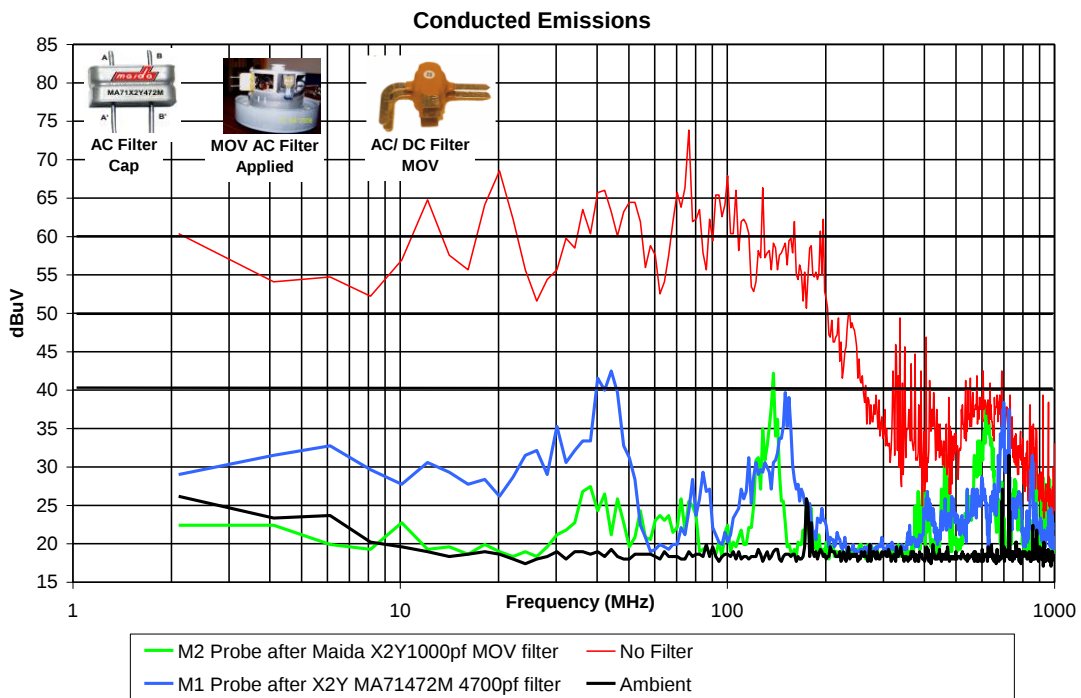
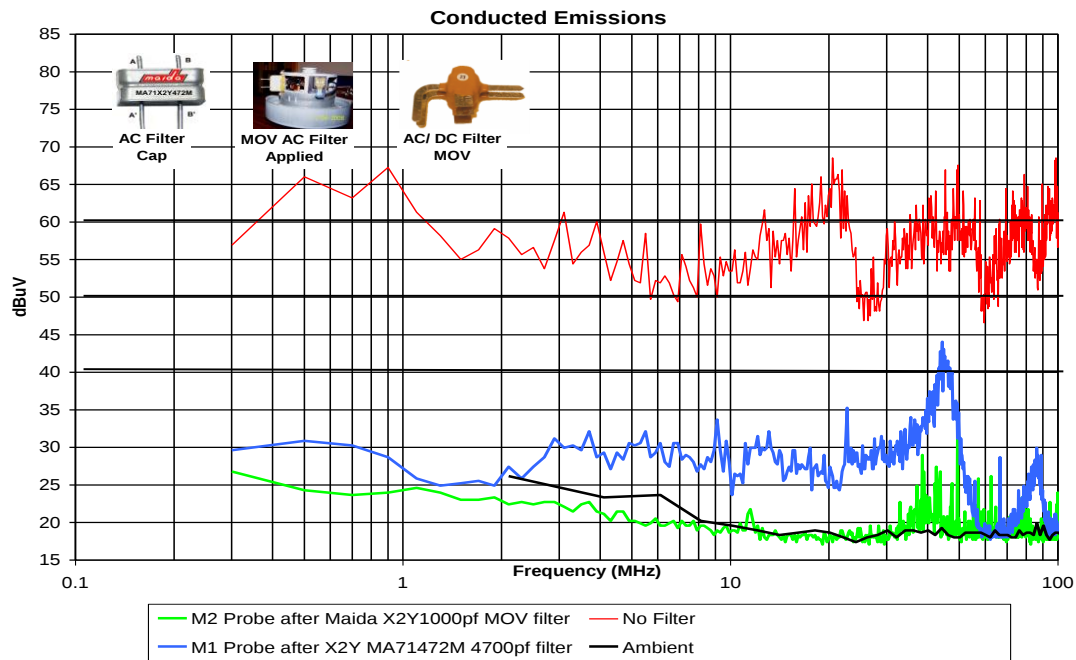


The data was generated using a current probe on the power leads with the DUT placed in a shielded enclosure as depicted below. X2Y utilizes this approach as a prototype test method to compare the performance of various types of EMI filters because many customers use this test method prior to sending DUTs for final testing by labs that are compliant for testing to CISPR 14:1



Test Set Up

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The following specification sheets represent the components used in the testing.

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Date: 11/13/2008

Filter Capacitor SPECIFICATION SHEET

MAIDA STYLE NUMBER MA71472M **ITEM NUMBER** 01-1176 **CLASS RATING** Y2
CUSTOMER **CUSTOMER P/N** NA **CONTACT** Ty Stewart

Performance Specifications

Operating Temperature	10 to 85 °C
Rated AC Voltage:	250 VAC
Capacitance @ 1KHz	4700 pF
Capacitance Tolerance	±20 %
Dissipation Factor @ 1KHz	5 %
Insulation Resistance @ 500VDC	10000 Mohm
Dielectric WithStanding Test Voltage For 1 Minute	2000 VAC
Temperature Characteristics	Z5U
Maximum Capacitance Change	+22-56 %
Temperature Range	10 to 85 °C

Safety Agency Recognition

UL 1283 File Number	E309133
CUL (CSA 22.2) File Number	E309133
VDE 60384-14 File Number	40023355

Notes:
Licensed Manufacturer of
X2Y Attenuators, LLC. technology

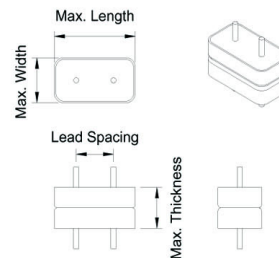


DEVELOPMENT COMPANY

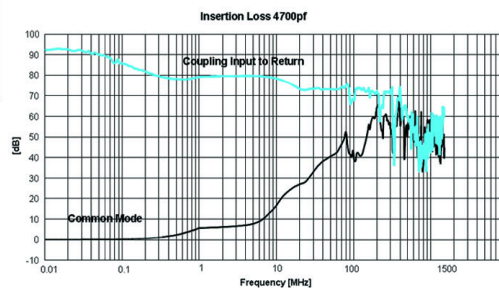
20 Libby Street
P.O. Box 3529
Hampton, Virginia 23663
(757) 723-0785
Fax (757) 722-119411

Physical Specifications

Maximum Thickness	13.97 mm .550 in
Maximum Length	27.5 mm 1.083 in
Maximum Width	20.1 mm .791 in
Lead Configuration	Cust Spec Lead
Lead Spacing	11.9 mm .469 in
Lead Spacing Tolerance	± 1 mm .039 in
Lead Diameter	1.65 mm .065 in
Minimum Marking	MA71472M



* Contact Maida for a more detailed configuration drawing.





VARISTOR SPEC SHEET

MJ SERIES

VARISTOR SPECIFICATION SHEET

Date: 12/01/2008

MAIDA STYLE NUMBER MJQ2131M

MAIDA ITEM NUMBER N/A

CUSTOMER N/A

CUSTOMER P/N N/A

CONTACT TY STEWART

Electrical Specifications

Continuous AC Voltage	130 VAC
Continuous DC Voltage	175 VDC
Maximum DC Leakage @ 175 VDC	200 uA
Low Varistor Voltage Limit	184 VDC
High Varistor Voltage Limit	224 VDC
Nominal Varistor Voltage	201 VDC
Current for Varistor Voltage	1 mA
Maximum Clamp Voltage	340 V
Maximum Clamp Voltage Test Current	50 A
Peak Current Rating (1 Pulse)	12000 A
Peak Current Rating (2 Pulse)	9000 A
Energy Rating (8X20us)	150 J
Energy Rating (10X1000us)	150 J
Typical Capacitance L-G	1800 pF
Typical Capacitance L-L	900 pF
Impulse Response Time	< 20 ns
Minimum Hipot of Coating	2500 VDC
Minimum I.R. of Coating	1000 MΩ

Physical Specifications

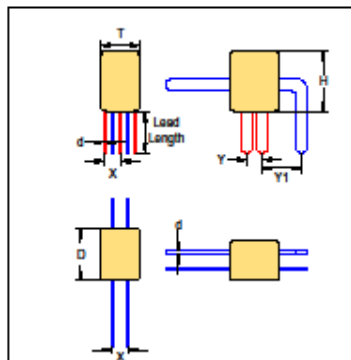
Lead Style	
X Nominal	0.164 in.
X Tolerance	0.02 in.
Y Nominal	0.165 in.
Y Tolerance	0.02 in.
Y1 Nominal	0.417 in.
Y1 Tolerance	0.02 in.
Lead Length Nominal	0.421 in.
Lead Length Tolerance	min. in.
d Nominal	0.025 in.
Wire Gauge	22 AWG
Minimum Marking	
Nominal Disk Size	12 mm
D Maximum	0.703 in.
T Maximum	0.578 in.
H Maximum	0.778 in.

Thermal Specifications

Minimum Operating Temperature	-40 °C
Maximum Operating Temperature	85 °C
Varistor Voltage Temperature Coeff	-0.05 %/°C
Minimum Storage Temperature	-50 °C
Maximum Storage Temperature	125 °C
Current/Energy Derating Above 85°C	-2.5 %/°C

Notes Licensed manufacturer of X2Y Attenuators, Inc. technology
Lead Free - Complies with RoHS

maida
DEVELOPMENT COMPANY
P.O. Box 3629
Hampton, Virginia 23663
(757) 723-0785 Fax (757) 722-1194

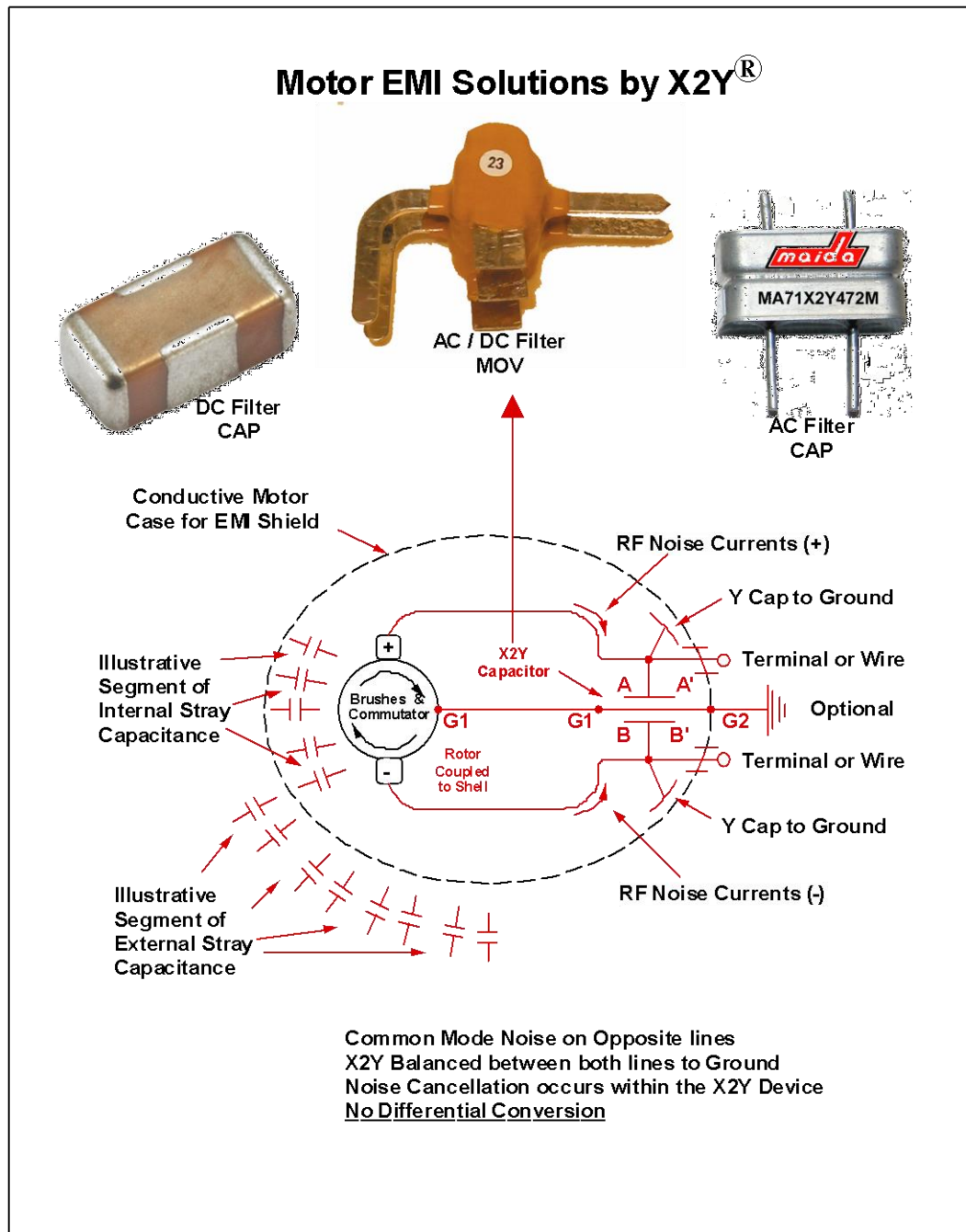


* Contact Maida for a more detailed configuration drawing.

Safety Agency Recognitions

UL 1449 File Number
UL 1414 File Number
CSA File Number
VDE File Number
SEV File Number

The following chart displays schematically the recommended placement of an X2Y filter device on a motor that is integrated into a motor enclosure. Additional application notes on this subject can be found in DC motor section of the X2Y Website: <http://www.x2y.com/techlib.htm#dcpub>. The same design recommendations for applying X2Y EMI filter devices in DC motors apply for AC motors.



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