
TEST AND REPORT PROCEDURE

NUMBER: REET

(Radiant Electrical Emissions Test)

EMF FIELD TESTING
Independent Test Lab

Issued: Dec. 20 2004
Revised: March 21, 2006

TEST AND REPORT PROCEDURE FOR MEASURING MAGNETIC AND ELECTRIC FIELD EMISSIONS LEVELS FROM ELECTRIC HEATING CABLES OR PANELS:

EMFs (Magnetic and Electric Fields) are produced by the presence of electrical current (Magnetic Fields) and electrical voltage (Electric Fields). This document is concerned with measuring both the magnetic and electric field levels as emitted by an electric heating cable or panel.

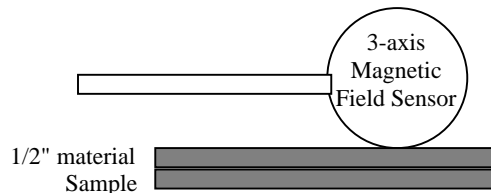
The following test and report procedure serves to document the testing requirements to be used to investigate the magnetic and electric field levels as emitted by an electric heating cable or panel. This protocol in no way determines or attempts to determine the meaning of the resulting data, but rather serves only to provide a comprehensive test procedure to enable a consistent means of measuring and documenting the emissions of the product.

1 TEST SPECIMENS

- 1.1 Sample(s) must be provided which have the highest level of emission to be representative of a specific product design. The sample may not represent a product design which is significantly different and which may affect the resulting emissions.
- 1.2 Other samples may be provided for testing and documentation.
- 1.3 Sample(s) must be in good operational order and in final production form.

2 TEST EQUIPMENT

- 2.1 The test equipment used to measure the magnetic field emitted must be a certified calibrated Holaday model HI-3627 Magnetic Field Meter. The meter must have a separate wand sensor (Holaday 3-axis part 3627) for remotely measuring the magnetic field. Documentation must detail the model information of this equipment used and the calibration date. The sensor must be placed over the sample (see Figure 1). The distance during test is the distance perpendicular to the sample, with the distance specified between the top surface of the sample and the bottom surface of the sensor. This distance is to be maintained by placing a 1/2" thick piece of plywood or similar non-metallic material between the sensor and the product.



(Figure 1, Sensor orientation)

TEST AND REPORT PROCEDURE

NUMBER: REET

(Radiant Electrical Emissions Test)

EMF FIELD TESTING
Independent Test Lab

Issued: Dec. 20 2004
Revised: March 21, 2006

- 2.2 The test equipment used to measure the electric field emitted must be a certified calibrated sensor Holaday model HI-4422 with a readout meter for measurements. Documentation must detail the model information of this equipment used and the calibration date. The sensor must be held at 1/2" above the sample (see Figure 1). The distance during test is the distance perpendicular to the sample, with the distance specified between the top surface of the sample and the bottom surface of the sensor. This distance is to be maintained by placing a 1/2" thick piece of plywood or similar non-metallic material between the sensor and the product.

3 TEST FACILITY

- 3.1 For best results it is recommended that the test facility for conducting these tests be shielded against outside emissions interfering with or adding to the emissions generated by the sample during testing.
- 3.2 Documentation must record the ambient magnetic and electric field levels at the time of test, even if it is zero. All other data reported from testing should then be absolute field values as emitted by the product only.

4 SAMPLE INSTALLATION

- 4.1 The sample shall be installed in accordance with the manufacturer's instructions to closely simulate a normal installation except that it shall be uncovered for the tests.
- 4.2 If any installation condition is specified by the manufacturer that may affect the total field emissions of the product, the condition(s) that produce the greatest level of emissions should be imposed for these tests.
- 4.3 Test under normal ambient temperature and humidity.

5 EMISSIONS TESTING

- 5.1 Install the sample in accordance with Section 4.
- 5.2 Take a photograph showing the full installation setup of the product for these tests. This photograph shall be shown in the final report issued.
- 5.3 With the sample not energized, record the ambient magnetic field in milligauss, measured at the center of the sample, 1/2" above the sample.
- 5.4 With the sample not energized, record the ambient electric field in volts per meter, measured at the center of the sample, 1/2" above the sample.
- 5.5 Apply rated power to the sample. Allow the sample to heat for 5 minutes prior to beginning measurements.
- 5.6 Measure and record the magnetic field in milligauss and the electric field in volts per meter emitted by the sample at 1/2" above the sample. Measurement shall be taken as follows:
- 5.6.1 20 locations over the entire area of the sample (not including the non-heating leads or the connection(s) to the non-heating leads)
- 5.6.2 These locations shall be patterned in a 6" grid over the mat as in Figure 2, where any point is located minimum 12" from a non-heating lead or non-heating lead connection. Locations 1 through 5 shall be directly over the longer edge of the sample panel or cable area. If the grid extends beyond the edges of the sample because it is small, then the grid may be reduced to a 5" grid, or a 4" grid as needed.
- 5.6.3 NOTE: The distance of 1/2" must be used as the measurement distance above the sample because this most closely represents a typical distance from the top surface of the heating product to the top surface of floor coverings installed over the top of the product.

TEST AND REPORT PROCEDURE

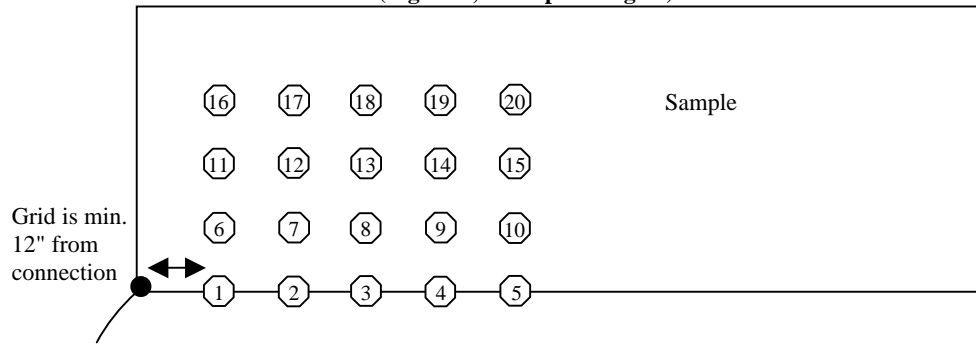
NUMBER: REET

(Radiant Electrical Emissions Test)

EMF FIELD TESTING
Independent Test Lab

Issued: Dec. 20 2004
Revised: March 21, 2006

(Figure 2, Example test grid)



5.7 Make a drawing showing the locations recorded, referencing the table of measured values at those locations.

6 RESULTS

6.1 A report shall be produced which includes, but is not limited to:

- The full test procedure used, including the particular requirements of test sample setup, positioning, cable spacings, and other factors which each tested sample was subjected to in order to meet the test procedure REET.
- The scope and samples tested, including a statement whether the samples tested represent a complete product group and the specific model or series represented.
- Photos of the samples tested in testing position
- Drawings showing measurement locations, referencing the data
- Data collected
- Any final comments, conclusions, requirements as necessary by the reporting group concerning usage of the report and its contents.

Example data table:

Sample model:		
Sample serial number:		
Sample manufacture date:		
Representative of series:		
Test date:		
Ambient magnetic field (mG):		
Ambient electric field (V/m):		
Test Location	Sample Magnetic Field (mG)	Sample Electric Field (V/m)
(1)	n1	m1
(2)	n2	m2
(3)	n3	m3
...
(20)	n20	m20
Average:	$(n1+n2+...n20) / 20$	$(m1+m2+...m20) / 20$