

INTRODUCTION

A "ring test" measures some properties of a subject, usually a coil, in or out of a magnet. Most importantly it identifies internal turn-to-turn shorts, as opposed to the coil to ground shorts identified with a hi-pot (high potential) test. The test consists of connecting the coil to a charged capacitor to form an LRC circuit and observing the decaying oscillations that result. The component values can be calculated from measured parameters of the waveform. Generally gross variations from the standard waveform are apparent with a turn-to-turn short.

This document specifies a general procedure. The connections to the test subject and the test voltage must be defined when the test is called for in a specification. The appropriate scales on the oscilloscope must be determined for each class of subjects and a reference trace established.

EQUIPMENT

Test electronics, such as Fermilab Magnet Coil Ringing Tester EC-46158.

Analog oscilloscope with camera, digitizing oscilloscope with printer or camera, or other waveform capturing device.

Cables.

PROCEDURE

1. Secure the area around the coil and test equipment to ensure that no personnel will come in contact with the exposed conductors.
2. With the test electronics switched off, connect the cables as shown in Figure 1.
3. Set the test voltage as called for in the subject specification.
4. Set the oscilloscope or other waveform capturing system to the appropriate voltage scale and sweep time.
5. Turn on the test electronics.
6. Adjust the trigger level on the oscilloscope, if necessary, so that it triggers at the 60 Hz rate provided by the test electronics.
7. Record the waveform with camera, printer, or on computer disk.
8. Switch off the tester electronics.
9. Short the test subject to ground to ensure that no stored charge remains.
10. Assess the technical quality of the waveform recording. Repeat the measurement if necessary.

UNLESS OTHERWISE SPECIFIED			ORIGINATOR	D. HARDING	7/13/92
.XX	.XXX	ANGLES	DRAWN	T. SKWERES	7/14/92
±	±	±	CHECKED	<i>D. Skweres</i>	7/14/92
1. BREAK ALL SHARP EDGES .02 MAX.			APPROVED	<i>D. Skweres</i>	7/14/92
2. DO NOT SCALE DRAWING.			USED ON	N/A	
3. DIMENSIONS BASED UPON ANSI Y14.2M-1982			MATERIAL	N/A	
4. MAX. ALL MACH. SURFACES ✓					
 FERMI NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT OF ENERGY					
<h1>RING TEST SPECIFICATION</h1>					
SCALE	FILMED	DRAWING NUMBER		SHEET	REV.
N/A		5520-ES-318052		1-2	
CREATED WITH I-DEAS V				USER NAME: SKWERES	

REV.	DESCRIPTION	DRAWN	DATE
		APP.	DATE

11. Scan the recorded waveform for gross abnormalities. The inspection report shall include the subject identification (type and serial number), the equipment identification (type and serial number), the waveform (photograph or printout), the date, the time, the inspector's name, and the inspector's assesment of the test.

12. Disconnect the test leads. Store all the test equipment neatly in it's designated spot.

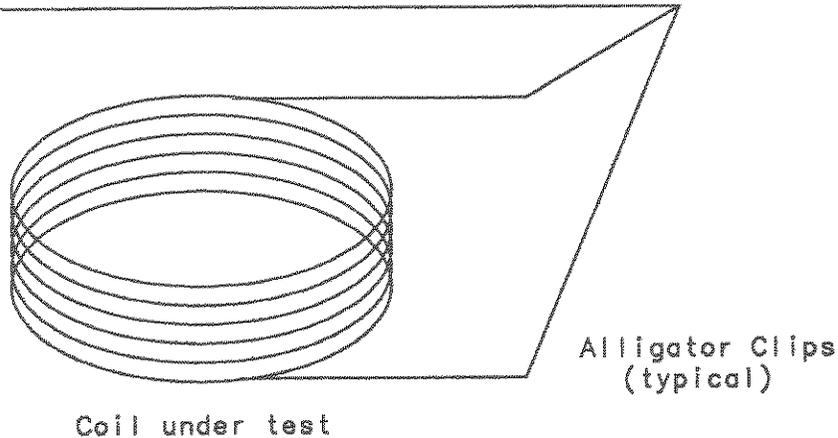
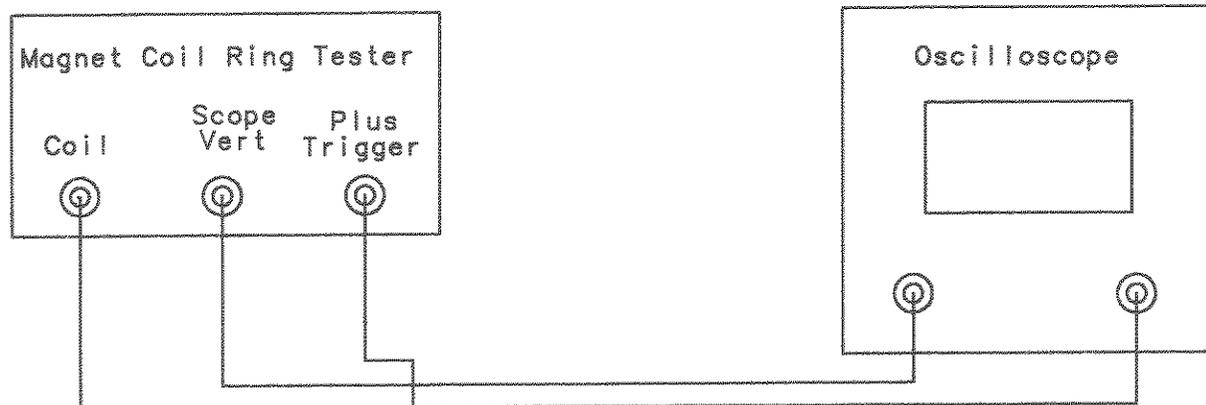


Figure 1
Cable Connection

UNLESS OTHERWISE SPECIFIED			ORIGINATOR	D. HARDING	7/13/82
.XX	.XXX	ANGLES	DRAWN	T. SKWERES	7/14/82
±	±	±	CHECKED	<i>[Signature]</i>	7/14/82
1. BREAK ALL SHARP EDGES .02 MAX.			APPROVED	<i>[Signature]</i>	7/14/82
2. DO NOT SCALE DRAWING.			USED ON	N/A	
3. DIMENSIONS BASED UPON ANSI Y14.5M-1982			MATERIAL	N/A	
4. MAX. ALL MACH. SURFACES					



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RING TEST SPECIFICATION

SCALE	FILED	DRAWING NUMBER	SHEET	REV.
N/A		5520-ES-318052	2-2	
CREATED WITH I-DEAS V			USER NAME: SKWERES	