Interpretation/explanation Request 2004-C63-SC1-2

A2LA is seeking your input on an ANSI C63.4 interpretation issue that is of an urgent matter. As you can see below, Msssrs. Heirman and Showers were provided with the email, however, A2LA has not received any feedback at this point in time. I am opening up this matter to Messrs Pritchard and Hoffmann in an effort to gain insight into the question at hand. I understand that each of you are extremely busy individuals but the lab in question is approaching their anniversary date and A2LA is unable to re-accredit them with an open deficiency remaining. I also realize Thanksgiving is fast approaching but if there is any way practical to provide A2LA with your interpretation on the issue, we would greatly appreciate it.

Thanks again for your time and assistance. Please do not hesitate to contact Tiffany White or me if you need any further information (both of our contact info is listed below).

Respectfully,

Trace McInturff
A2LA Operations Manager

Date: Mon, 18 Oct 2004 12:37:55 -0400
To: d.heirman@ieee.org
From: Tiffany White <twhite@a2la.org>
Subject: Interpretation of clause 4.1.5 in ANSI C63.4-2003
Cc: showers@pender.ee.upenn.edu, Timothy Rasinski <trasinski@a2la.org>

Dear Messrs. Heirman and Showers,

I am an employee with the American Association for Laboratory accreditation (A2LA) and I am interested in obtaining an interpretation of clause 4.1.5 in ANSI C63.4- 2003. A recent assessment resulted in a different understanding by both the laboratory and the assessor, and as a result I am seeking clarification.

Please note that the assessment resulted in the following finding by the assessor.

The assessor's finding was:

Antennas for use from 30 to 1000 MHz shall be calibrated in accordance with the methods specified in ANSI C63.5-1988 and ANSI C63.5-1998. Adjustable (tunable) dipole antennas used below 80 MHz while fixed-tuned at 80 MHz resonant length shall also be calibrated at that fixed length for the range of frequencies of use. Antennas for use at or above 1 GHz shall be calibrated in accordance with one of the methods in ANSI C63.5-1998 or IEEE Std 149-1979.

All antennas shall be calibrated per ANSI C63.5-1998.

The laboratory's response was:
We believe that the deficiency is based on a misunderstanding of the ANSI C63.4-2003 antenna calibration requirement. ANSI C63.4 does not require the antenna calibration method to be only per ANSI C63.5 nor does the standard require the use of tuned dipoles as reference antennas.

Clause 4.1.5 of ANSI C63.4-2003 clearly states "For the present, both ANSI C63.5-1998 and ANSI C63.5-1988 **are referenced for use** *in calibrating antennas for..."*

*This does not state "***shall be used***". Referenced is only for reference, but not mandatory.*

Questions for clarification:

1) Does clause 4.1.5 state, in a mandatory way, that antennas used for NSA measurements and for

product compliance measurements shall be calibrated in accordance with ANSI C63.5-1988 or ANSI C63.5-1998? Or is the sentence in question an informative statement, that indicates that the ANSI C63.5 antenna calibration standards are suggested to be used?

2) Is it permissible to use a broadband antenna as a reference antenna for the standard antenna method? Currently, ANSI C63.5 clause 6, states: "*The Reference Antenna Method (RAM) provides a method of antenna calibration based on the use of a dipole with a well-matched balun whose construction is described in 6.2*." Is it permissible to use a calibrated and traceable broadband antenna as a reference antenna?

If you could please provide an interpretation of this clause in writing, so this may be used in the future for reference.

Thank you in advance for your help.

Sincerely,

Tiffany D. White
Laboratory Services Officer
American Association for Laboratory Accreditation (A2LA)
5301 Buckeystown Pike, Suite 350
Frederick, MD 21704
Phone: (301) 644-3218
Fax: (301) 662-2974
www.a2la.org
Trace McInturff
Operations Manager

The following responses from the C63 Subcommittee 1 are considered explanations of the clauses in ANSI C63.4.

The explanation to answer the first question is:

The wording in C63.4 - 2003, para 4.1.5 is perhaps not as clear as it might be. However, the intent was to allow use of either C63.5 - 1988 or - 1998, but not any other standards except for those further referenced in either version of C63.5.

Further on in C63.4-2003, para 4.1.5, there is the statement "Antenna calibrations -------- can use either version of the standard (C63.5) in that ----purpose". This sentence does not imply that the use of any standard other than C63.5 is considered.

The explanation to answer the second question is:

Clause 6 of C63.5 - 1998 states "The RAM provides a method of antenna calibration based on the use of a dipole ---." This clearly calls for the use of a dipole if the RAM method of calibration is desired. In the same document, however, calibration of broadband antennas is also provided for where the use of the SSM (Standard Site Method) is provided and takes precedence over other techniques referenced in the standard for such antennas. So depending on the antenna desired to perform the emission measurement, C63.5 provides calibrations associated with the types of antennas commonly used for radiated emission measurements.