ANSI-ASC-C63® Interpretation Request Form

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This form shall be used for submission of Interpretation Requests related to ANSI-IEEE standards that are within the responsibility of ANSI-ASC-C63®. The eight parts of the form must be filled out completely, with the exception of the Subcommittee Response, to ensure expedient processing. This completed form is to be submitted to the Secretary of ANSI-ASC-C63® via e-mail.

Submission Date	Originator Name, Company
10/20/2023	Charles Wang / Champro Technology Co., Ltd.

Standard	Clause/ Sub clause	Paragraph Figure/ Table	Type (General/ Technical/ Editorial)	Comment / Inquiry	Subcommittee Response (to be filled in by Subcommittee Chair)
C63.4-2014	Annex D D.3 Please see next pages		Technical	D3: The last statement says: "The alternative test site is considered suitable for performing radiated emission testing if all NSA measurements prescribed above meet the requirements of 5.4.4.2 and the reference ground plane requirements of 5.4.3." It means there are two key factors for a suitable test site for radiated emission testing, one is NSA and the other is the condition of reference ground plane. Please see the following pages, how to deal with the problem of gaps on the ground plane (see last page) for complying with the requirements of 5.4.3.?	It appears that the interpretation request only relates to frequencies from 30 MHz to 1 GHz. A reflecting ground plane shall be installed on the floor of the radiated electric field emission test site. The condition of the reference ground plane does not determine the suitability of the site for radiated emission testing. The referenced text in ANSI C63.7 does not contain normative text regarding discontinuities, voids, or gaps. The normative requirement is the test site must meet NSA for a standard test site and volumetric NSA for an alternate test site below 1 GHz. All test sites must meet the sVSWR requirements if used above 1 GHz. As long as these requirements are met the site is sufficient to use for radiated emissions measurements.

ANSI C63.4 Statement as follows

ANSI C63.4-2014
American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

b) The total number of horizontal polarization measurements along the test volume diameter joining the left and right positions may be reduced to the minimum number necessary for the antenna footprints to cover 90% of that diameter.

c) The vertical polarization measurements at the 1.5 m height may be omitted if the top of the EUT, including any table support fixture, is less than 1.5 m in height.

d) If the test volume is no larger than 1 m in depth, by 1.5 m in width, by 1.5 m in height, including table, if used, horizontal polarization measurements need to be made at only the center, front, and rear positions but at both the 1 m and 2 m heights. If item a) applies, the rear position may be omitted. This will require a minimum of eight measurements: four positions vertical polarization (left, center, right, and front) for one height, and four positions horizontal polarization (center and front) for two heights; see Figure D.5 and Figure D.6.

NSA measurements shall be performed with transmit and receive antenna separation distance held constant according to Table D.1 through Table D.3. The receive antenna shall be moved along a line toward the turntable center to maintain the appropriate separation; see Figure D.3 through Figure D.6. The alternative test site is considered suitable for performing radiated emissions testing if all NSA measurements prescribed above meet the requirements of 5.4.4.2 and the reference ground plane requirements of 5.4.3.

5.4.3 Reflecting ground plane

A reflecting ground plane shall be installed on the floor of the radiated electric field emission test site to provide a uniform, predictable reflection of radiated emissions measured at the site. The ground plane shall be constructed of metallic material with limited discontinuities and sufficiently high conductivity and surface smoothness to facilitate compliance with the NSA requirements. The surface smoothness of the ground plane shall comply with the maximum values for terrain roughness defined by the Rayleigh criterion, as shown in ANSI C63.7. Ground planes with discontinuities (including connection point separation between adjacent metallic materials) larger than 3.0 cm, or with overall size less than the minimum configuration shown in Figure 5, are not recommended; see ANSI C63.7 for guidance about test sites in the frequency range of 30 MHz to 1 GHz.

ANSI C63.7 Statement as follows

6.3 Ground-plane material

As stated in ANSI C63.4-1992, 5.4.1 and 5.4.3, a conducting ground plane is required. Metals such as copper, steel, and aluminum are recommended as the ground-plane material for measurement distances between 3 m and 30 m. Some examples include solid metal sheets, metal foil, perforated metal, expanded metal, wire cloth, wire screen, and metal grating. The ground plane should have no voids or gaps with linear dimensions

[3]The rms roughness is a general view of undulations in the ground plane by representing these undulations as shown in figure B1.

that are greater than 1/10 of a wavelength at the highest frequency of measurement (about 3 cm at 1000 MHz). Material comprised of individual sheets, rolls, or pieces should be soldered or welded at the seams, preferably continuously, but in no case with gaps longer than the 1/10 wavelength criterion. After installation and especially if the above criterion is not adhered to, the adequacy of the ground-plane material and interconnecting mechanism and fastening techniques should be determined by using the site-characterization procedure and acceptability criterion in ANSI C63.4-1992. If the ground plane is exposed to the weather, adequate precautions should be taken to ensure that the material and interconnecting mechanism do not oxidize or corrode to the point that the conductive properties of the entire test area ground plane are degraded. Repeat site-attenuation measurements are clearly needed for all sites (a minimum of every six months is recommended) and, for sites exposed to the weather, more frequently. In fact, some test laboratories perform representative attenuation measurements at the start of each major test program.

How to deal with the gap problem