Date	Document
18 May 2010	C63.4-2009 & C63.5-2006

Rrequestor	**Clause/ Subclause**	**Paragraph Figure/ Table**	**Type of comment** (General/ Technical/Editorial)	**COMMENTS**	**Proposed change**	**OBSERVATIONS OF ASC C63®** on each comment submitted
			Technical	Clause 4.5.4 of ANSI C63.4-2009 states that horn antennas are to be used for radiated emission measurements above 1 GHz. It seems that no other antennas (e.g., hybrid antennas, logarithmic-periodic antennas) are allowed to be used in the frequency range above 1 GHz. The antenna calibration standard ANSI C63.5-2006 suggests in table 1 that hybrid antennas can be calibrated using both the reference antenna method (up to 1 GHz) and the standard site method (up to 40 GHz). It is unclear at this point why table 1 in ANSI C63.5-2005 suggests a calibration method for a hybrid antenna that is applicable in the frequency range above 1 GHz but ANSI C63.4-2009 seems to disallow the use of such a hybrid (or other broadband) antenna in the frequency range above 1 GHz.	Please clearly state if hybrid or other broadband antennas can be used for radiated emission measurements above 1 GHz.	Recommendation: Hybrid or other broadband antennas cannot be used for radiated emission measurements above 1 GHz. See table 1 in clause 4.5 and clause 4.5.4 of C63.4-2009 for the allowed list of antennas. While C63.5-2005 provides a method to calibrate broadband antennas above 1 GHz, the current revision of C63.4 does not allow for their use.

From C63.4-2009

Table 1—Antennas for selected frequency ranges

Antenna	10 Hz to 20 kHz	10 kHz to 150 kHz	0.15 MHz to 30 MHz	30 MHz to 1000 MHz	1 GHz to 40 GHz
Rod (passive)	Yes	Yes	Yes	No	No
Dipole (passive)	No	No	No	Yes	No
Biconical dipole	No	No	No	Yes	No
Log-periodic dipole array	No	No	No	Yes	No
Loop (passive)	Yes	Yes	Yes	No	No
Waveguide horn	No	No	No	No	Yes
Active monopole	Yes	Yes	Yes	No	No
Double-ridged guide horn	No	No	No	Yes	Yes

NOTE 1—This table is adapted from Table 6 of ANSI C63.2-1996.

NOTE 2—Frequency ranges (i.e., instrumentation tuning ranges) are as suggested in Clause 5 of ANSI C63.2-1996.

NOTE 3—Some designs of dipole, biconical, and log-periodic dipole array antennas operate within portions of the 1 GHz to 40 GHz range.

4.5.4 Electric field measurements (1 GHz to 40 GHz)

Linearly polarized antennas as specified in Table 1 and calibrated in accordance with ANSI C63.5 shall be used. These antennas include double-ridged waveguide horns, rectangular waveguide horns, pyramidal horns, optimum-gain horns, octave-band horns, and standard-gain horns. The main “beam” or main lobe of the pattern for any antenna used shall be large enough to encompass the physical size of the EUT, or system arrangement, when located at the measuring distance. See 8.2.4 for details on techniques for encompassing products in the measurement process.

The aperture dimensions of these horn antennas shall be small enough so that the measurement distance in meters is equal to or greater than the Rayleigh (far-field) distance [i.e., $R_m = (2D^2)/\lambda$], where D is the largest dimension of the antenna aperture in meters and λ is the free-space wavelength in meters at the frequency of measurement. In case of dispute, measurements made with a standard-gain horn antenna shall take precedence.