ANSI-ASC-C63® Interpretation Request Form

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
May 11/2017	Scott Drysdale, TUV SUD Canada.

Standard	Clause/ Sub clause	Paragraph Figure/ Table	Type (General/ Technical/ Editorial)	Comment / Inquiry	Subcommittee Response (to be filled in by Subcommittee Chair)

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		ANSI C63.4 ANSI C63.5	N.1(b)(2) 4.4.1	Antenna symmetry of +/- 1 dB is required for hybrid antennas. My understanding is this would allow for up to +/- 1dB related uncertainty due to 180 degree rotation of the antenna. A hybrid antenna may not have calibrated symmetry data available, even if that antenna would meet the requirement if the measurement was performed. If a hybrid antenna is clearly labeled vertical up and horizontal up, calibrated as such, and used as such, would this controlled method not result in less related measurement uncertainty value? If the antenna is labeled vertical up and horizontal up, calibrated and used as such, can a specific one time waiver of the antenna symmetry requirement be granted until next calibration? If a waiver cannot be granted, can you describe the benefit of having the antenna symmetry data if the antenna will not be used at the 180 degree rotation?	The symmetry ("balance") parameter of an antenna incorporating a balun in its design describes the performance of the balun of the antenna. If a balun is not perfectly balanced, the differential mode (DM) antenna signal (i.e., the desired signal) will be converted into a common mode (CM) signal in proportion to the severity of the imperfection (unbalance). These CM currents create electromagnetic fields that are then picked up by the receiving antenna which therefore influence the measured radiated emissions results. The CM currents also becomes part of the antenna radiation structure that changes the antenna behavior. Because the CM behavior of an antenna changes due to the effects of height scanning and test environment (e.g. closeness of one or both elements of the antenna to the Ground Plane, etc.,) an unbalanced antenna will have increased measurement uncertainties relative to a perfectly balanced antenna. Labeling an antenna in accordance with its calibration orientation (i.e., "Horizontal Up" and "Vertical Up") and consistently using it as it has been labeled will improve the overall *repeatability* of the radiated emission measurement, but will not influence the performance of the balun. Antenna labeling (and consistent use) does not address the actual root cause of the symmetry problem (i.e., imperfect balun performance). Due to the very wide variations in Hybrid Antenna balun design among manufacturers and models, Hybrid Antennas (taken as a class) are particularly problematic with respect to imperfections in balun performance. In order to ensure that final compliance radiated emissions measurements made with Hybrid Antennas do not have excessive measurement uncertainties, Annex N of ANSI C63.4-2014 imposes a symmetry requirement for Hybrid Antennas of +/- 1.0 dB, measured with the antenna at a 1 m height above the Ground Plane. Therefore, the symmetry of a Hybrid Antenna shall be in compliance with the Annex N requirement to be suitable for making final compliance radiated emission measurements. Annex N of ANSI C63.4-2014 allows two different methods for determining the suitability of a Hybrid Antenna for use in making final compliance radiated emission measurements.

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					The first and simplest method is to select a Hybrid Antenna that satisfies the "Condition B" requirements - i.e., the dimensional, VSWR, and Symmetry requirements stated therein. (The services of an ISO/IEC 17025-accredited Antenna Calibration Laboratory are required to determine whether or not the VSWR and the Symmetry requirements are met; these determinations are made when the antenna is calibrated). The second method is to satisfy the "Condition A" requirements. This is done by the Test Laboratory at the particular Test Site where the Hybrid Antenna is to be used. The "Condition A" procedure amounts to comparing the measurement performance of the Hybrid Antenna from 30 MHz to 200 MHz with that of a Biconical Antenna, and comparing the differences in measured results to the stated limits. In summary, the selection of a suitable Hybrid Antenna for use in making final compliance radiated emissions measurements is the responsibility of the user. The user is responsible for having objective evidence that the requirements have been satisfied. Finally, as to the question of "waivers": Neither the Accredited Standards Committee C63 (which is the Standards-setting body responsible for developing all ANSI C63-series Standards) nor the IEEE (which is the Secretariat for the Accredited Standards Committee C63) are authorized to issue "waivers". The issuance of wavers is typically a matter for regulatory authorities (e.g., the US Federal Communications Commission or ISED Canada) to consider, and occasionally may be a matter for contracting authorities to consider (when the measurements are not being made for regulatory compliance purposes). Regardless, the issuance of waivers does not in any way involve either the Accredited Standards Committee C63 or the IEEE.