C63.4_D2.3_2024-02-07 COMMENT SUBMISSION FORM

Date	Document
2024-02-07	C63.4 - Draft D2.3 (2024-02-07)

Name and number	Line number	Clause/ Subclause	Par., Fig., Table	Type	Comment	Proposed change	Proposed resolution by the chair on each comment submitted
Mark Arthurs -1				G	Standard is extremely long and difficult to follow. I am concerned that no two people will come to the same conclusion on how to measure configure and exericise their product.	This should be the focus of the next revision	Accepted in principle This was added to the list of items for next edition, as AI-216. However, more details on what is the problem and a more concrete proposal would help.
UL-1	184			E	Accredited Standards Committee C63 should be changed to USEMCSC C63 per the latest IEEE template	Change Accredited Standards Committee to USEMCSC	Accepted
UL-2	255			E	ASC should be changed to USEMCSC	Change ASC to USEMCSC	Accepted
AG-16	451 806 4387	Various	Various	T	Measurement uncertainty of instrumentation should be allowed to follow the processes of the relevant CISPR only or the relevant part of the ETSI requirements. All this statement does is raise a flag for assessors against laboratories that don't reference C63.23. *Measurement instrumentation uncertainty shall be calculated as per the guidelines in ANSI C63.23 and the actual calculation method shall be available for inspection by any interested third party, but shall be based on the actual instrumentation and test site used by the specific test lab. Measurement instrumentation uncertainty need not be calculated and reported for test cases that are not covered in ANSI C63.23.* The note is irrelevant about CISPR 16-4-2.. In addition, the document itself already references ETSI TR 100 028-1 v1.4.1 This is in alignment with what is stated in line 451. For example, we reference both CISPR 16-1-1 and ANSI C63.2 because ANSI C63.2 adds specific requirements.	Add the necessary references can update the various sections.	Not accepted While C63.4-2014 allows either C63.23 or CISPR 16-4-2, the WG decided to exclusively require C63.23 for the next edition of C63.4. The note was added following this decision, to inform the reader that 16-4-2 is referred to in C63.23. Line 451 is in the introduction, in the list of changes from 2009 edition to 2014 edition, so it cannot be changed (historical). The ETSI standard (part 1 and part 2) is only referenced in subclause C.3.2 and only for particular items (subclauses 6.1 / 6.2 of part 1 and two equations of part 2).

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BB - 1 (Apple)	806-809 3608-3609	1.6 9.2.8.1	Par. 2 Par. 1	T	MIU estimates are required for all compliance test measurements in accordance with ISO 17025:2017. Draft D2.3 specifies only the radiated emissions measurements taken in the frequency ranges which are specified in ANSI C63.23 (from 30 MHz to 18 GHz) require MIU estimates, contradicting the requirements of ISO 17025:2017.	Align with ISO 17025:2017 requirement that the "laboratory performing testing shall evaluate measurement uncertainty" without exemptions for any frequency bands by removing or revising statement so as to require that MIU is evaluated for measurements over all frequencies included within the scope of D2.3 i.e. from 9 kHz to 40 GHz.	Not accepted C63.23 also includes conducted emissions, not only radiated. This issue also applies to the existing C63.4-2014. But the fact that C63.4 (through C63.23) asks for less than ISO 17025 does not constitute a contradiction to the latter. To note that the same can be said of CISPR 16-4-2, which does not cover all test cases that exist in CISPR 16-series and in CISPR product standards.
JC - 4 (Apple)	879	3.1	Par. 10	E	definition is for both E and H field stregth, why have (or magnetic) and (or H), in a parenthesis.	ratio of the electric or magnetic field strength (E or H)	Accepted
UL-3	896	3.1		E	The Keysight app note reference B7 has been updated many times. Current version is dated October 10, 2020 but the current draft reference is 2016.	Suggest updating B7 to the most recent date, October 2020.	Accepted
AG-1	1225			E	The term 'following subclause' is unbound	Specify which clauses are relevant.	Accepted This was changed to "this clause".
AG-2	1260	4.2.2	2nd Par	T	Spectrum analysers are scanning receivers. Also, there is a shall statement which is impossible to comply with because there insufficient information provided to be able comply. We are fortunate that 'traditional' receivers are no longer used. I think the paragraph is appropriate to 'Single frequency receivers which are stepped (or swept) over an appropriate range'.	If the paragraph is to remain then it needs to better explain what a scanning receiver is…. and that at each step (every 1/2? bandwidth) that the dwell time needs to be sufficient to enable the EUT to go through one complete operating cycle.	Accepted First sentence of the second paragraph deleted.

Name and number	Line number	Clause/ Subclause	Par., Fig., Table	Type	Comment	Proposed change	Proposed resolution by the chair on each comment submitted
AG-3	1264	4.2.2	3 Para	T	This paragraph has many shall statements but with unbound statements. What is 'fully realized' and 'confimed' … it sort of states that the results should be valid? If the output of the quasi-peak or linear average detector is indicated in logarithmic units, then the logarithms shall be taken in the measuring instrument after the signal is detected and the detector function is fully realized. It shall be confirmed that the output indication represents the logarithm of the true quasi-peak or linear average value of the signal measured.	Provide more information about this requirement or delete the paragraph.	Partially accepted Second sentence of third paragraph deleted.
AG-4	1293	4.2.3	a)	T	There is a requirement to measure the level at the mixer for analysers operating without a low band preselector. There is a shall statement but there may be no effective method for satisfying this requirement. The 150 mV peak is a random value and not particularly helpful.	Considering changing this to a should statement… or defining a requirement that is reasonable.	Partially accepted Text revised but the requirement to operate linearly has to stay ("shall").
AG-5	1301	4.2.3	b)	T	The linearity check uses 6dB and there is only a need to provide 6 dB of level above the noise floor. These 2 requirements are in conflict.	Suggest 3 dB is sufficient.	Not accepted The 6dB is suggested, not required.
AG-6	1319	4.2.3	c)	T	This statement meaningless because the start time of all scans is different? *The starting time of the scans shall be varied to help avoid any synchronism.* It may be to do the time period between different scans? But physics tells us that this will always be different because there is not boundaries.	Please define a specific requirement.	Partially accepted Changed to "should" and updated the sentence.
AG-7	1320	4.2.3	d)	T	Confused by this requirement? Between which emission? The total observation time for a given frequency range shall be longer than the time between the emissions.	Please define a specific requirement.	Accepted (this is still item c, not d) "time between the emissions" was changed to "EUT operating cycle". Also, the entire 4.2.3 was reviewed and material that is general and applicable to any type of measurement instrument was moved in a separate subclause.

Name and number	Line number	Clause/ Subclause	Par., Fig., Table	Type	Comment	Proposed change	Proposed resolution by the chair on each comment submitted
AG-8	1339	4.2.3	f)	T	Please provide evidence that half bandwidth steps are required and not just slight greate than 'bandwidth steps' … other factors such as sweep time may be more of a concern.	Provide necessary information.	Accepted NOTE 4 updated with text on average detection and a new note added to explain why ½ RBW is important for average detection. A second new note added to explain that sweep time and span are coupled for calibrated measurements. In addition, the WG decided to add a requirement that the step size must be less than or equal to half the RBW for all measurements.
UL-4	1367	4.2.5.1		T	Bandwidth correction is only required when Bmeas is less than Bimp. In the case where a RBW can be set to larger than the signal being measured there there should be no correction made (that would correct down instead of up which should not be allowed).	Consider adding text to clarify that corrections are only necessary when the measurement BW is less than the sgnal being measured.	Noted The entire paragraph and list deleted.
AG-9	1383	4.2.5.1	1)	T	… not sure what this statement means, it is a shall with a condition. … how linear ? and under what condition does it have to be proven *The quasi-peak detector shall have a linear response.*	Defined a more specific requirement.	Accepted Text updated and expanded.
AG-10	1390	4.2.5.1	2)		… not sure what this statement means, it is a shall with a condition. … how linear ? and under what condition does it have to be proven *The average detector shall have a linear response*	Defined a more specific requirement.	Accepted Text updated and expanded.
AG-11	1389	4.2.5.2	3)	T	This is a shall statement… *When measuring an emission with a low duty cycle, the dynamic range of the measuring instrument shall be adequate to yield correct and calibrated results.* What is a low duty cycle and how do you measure it….. and what is adequate if you don't know the correct result.	Please defined a workable requirement.	Accepted Deleted item 3) and instead added a reference to 5.2.2 of CISPR 16-1-1 in 4.2.3.

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AG-12	1422	4.2.5.2		T	This is conflict with the prior section which gives a process… *When performing final compliance measurements, the video bandwidth shall be set to a value lower than the lowest pulse repetition frequency of the measured signal, but not lower than 1 Hz, in accordance with CISPR 16-1-1:2019-05, so that the proper integration time is realized; G.7 provides other details.* If there is requirement to measure the pulse repetition, then please proved the method.	Please defined a workable requirement.	Accepted in principle Paragraph deleted and instead a reference to CISPR 16-1-1 was added to item d) in the list above.
Randy Long-1	1475	4.4			Is the intent “before each use” or that they are in a current calibratation state?	Voltage probes (see definition in 3.1) shall be in a current state of calibration.	Accepted Deleted “for use”.
UL-5	1535		Table 2, footnote b	T	Remove Rayleigh Distance as $D^2/2\lambda$ is far-field distance not Rayleigh Distance ($2D^2/\lambda$)	Change Rayleigh distance to Far Field Distance to align with C63.5 or copy Footnote C of table 3 to this footnote for consistency.	Accepted
UL-6			Table 3 footnotes	E	Alternating footnotes are not highlighted grey.	For consistency follow footnote formatting of Table 6	Accepted
AG-13	1547, 1597, 1673	4.5.1.2	c)	T	It this still a necessary requirements considering we have defined the minimum 3 dB beamwidth ? *The largest aperture dimension, D, of these horn antennas (i.e., length or width; in m) should be small enough so that the measurement distance (in m) is equal to or greater than the distance Rm = D2 / 2λ, where λ is the free-space wavelength (in m) at the frequency of measurement*	Consider it this is still a necessary requirement.	Noted It is necessary. The requirements for the beamwidth (in 8.4) are concerned with the minimum illumination of the EUT face, but say nothing of far-field (to note that the far-field criterion here is only based on the antenna, not on the EUT).
AG-15	1600 1564	4.5.1.3	f	T	There is effectively no difference between an Active horn antenna and a passive horn antenna with a pre-amplifier, but when using active horn the user shall verify that overload conditions are present. The use of an active horn antenna is permitted for *final compliance* measurements on devices; however, users shall verify whether the ambient and/or EUT signals are causing the preamplifier portion of the active horn antenna to saturate (thus yielding unacceptable, erroneous measurements) and, if they are, corrective action shall be taken (e.g., use of a notch filter, reorientation of the measurement axis) to eliminate the saturation condition. This is true for the loop antenna too.	Define a workable solution for both types of systems and apply them to both types of systems.	Noted The scenario with an external preamp is dealt with in 4.2.6. And the general issue with overload and linearity is covered in 4.2.3.

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BB - 2 (Apple)	1572-1575	4.5.1.3	Table 5 Note b	T	The requirement that an AIMP with the same "insertion loss value" with no tolerance specified, if strictly followed, should preclude the use of an AIMP other than the exact same one which the antenna was calibrated with.	Revise statement so as to require the the exact same AIMP that the antenna was calibrated with is used for EUT testing.	Not accepted The AIMP is an attenuator that might be needed for compliance with Annex L and it is not to be confused with the attenuator that might be permanently attached to the antenna and the combination calibrated at the antenna cal lab.
AG-14	1574 1593	4.5.1.3	b	T	This requirement is far too draconian, it is a pad of the same or large value? *… then either the exact same AIMP (i.e., same serial number) or an attenuator of the same make, model number, insertion loss value, and the same frequency range of operation shall be used …* This wording	Update the requirement… to a pad of similar or larger value.	Accepted
BB - 3 (Apple)	1619-1620	4.5.1.4	Table 8	E	Table doesn't specify if antenna is permissible as an antenna on transmit only or as a disturbance measuring antenna only; rather it's divided by footnotes a and b which doesn't make it clear.	Include column specifying "transmitting antenna only" and "disturbance measuring antenna only" in Table 8.	Partially accepted Subclause deleted as site validation antennas are defined in C63.25.1/2.
UL-7	1656	4.5.3		T	The current draft of C63.5 does not specify antenna types for measuremnets. The focus of the standard is calibration by frequency range not antenna type. Suggest not referring to C63.5 but rather tables in 4.5.1	Change text of the first sentence to "Linearly polarized antennas, as specified in Table 2, Table 5 and Table 7, as applicable and calibrated in accrodacne with C63.5 shall be used." Then remove the last senstance starting with "See…" This would also align with Clause 4.5.4 specificatoin of allowable antnenas.	Accepted
BB - 4 (Apple)	1683-1684	4.5.4	Note 2	T	CISPR 16-1-4:2019 Subclause 7.3.1 states: "The site validation method evaluates a given test volume for the specific combination of site, receive antenna, test distance (described in CISPR 16-2-3), and absorbing material placed on the ground plane". Hence it should be mandatory, not recommended, to use the same type of receive antenna for EUT testing that used during site validation testing.	Mandate the use of the same type of receive antenna for EUT testing that was used for site validation testing.	Accepted This is also normative in C63.25.1.

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UL-8	1703	4.6.2		E	Does references to CISPR 16-1-1 need to be dated	Use dated reference	Not accepted Clause 2 already says what edition of each standard must be used. Dated references outside of clause 2 should only be made when referring to a specific item in that standard (such as a clause, subclause, annex, table), per the rules in the IEEE Style Manual, or when important (such as in the definitions, due to copyright footnotes, or in 4.2.1, where a distinction is needed between Ed.5 and Ed.3.2 of 16-1-1). When the reference is to the entire standard, this can be undated (the date would be redundant). However, this convention was not consistent throughout the document and has been fixed.
BB - 5 (Apple)	1715-1716	4.6.3	Par. 3	T	Through the adoption of ANSI C63.5:2017 Annex N, measurement of the ACF is restricted to a single test method. It should be permissible to utilize other test methods, if results from other test methods e.g. test methods described in CISPR 16-1-6:2014 Subclause 5.2. are demonstrated to produce practically equivalent results to the test method described in ANSI C63.5:2017 Annex N.	Permit the use of test methods described in CISPR 16-1-6:2014 if shown to produce practically equivalent results as those derived from the test method described in ANSI C63.5:2017 Annex N.	Not accepted This is for C63.5 WG to address by adopting CISPR 16-1-6 in their Annex N.

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BB - 6 (Apple)	1722-1723	4.6.3	Par. 7	T	Draft D2.3 sets limitations on hybrid antenna VSWR (smaller than or equal to 2.5:1). In addition, so as to control antenna VSWR for other antennas, limitations on VSWR of antennas used in measurements from 1 GHz to 40 GHz should be specified. As an example of typical values published by manufacturers, the ETS-Lindgren 3117 DRG antenna has a "VSWR: 3.5:1 Maximum" according to the manufacturer. Setting requirements that VSWR of antennas for 1 GHz to 40 GHz measurements are measured in accordance with CISPR 16-1-6:2014 Annex A.8.7 for the purposes of MIU evaluation would align methods used for MIU evaluation with accepted antenna calibration practices as well.	Set a limitation on VSWR of antennas used for measurements from 1 GHz to 40 GHz. Define test method in accordance with CISPR 16-1-6:2017 Annex A.8.7.	Not accepted Please provide data showing this is a problem.
BB - 7 (Apple)	1726-1728 3609-3612	4.6.3 9.2.8.2	Par. 10 Par. 1	T	CISPR 16-1-6:2014 Annex A.8.7 on the measurement of antenna VSWR requires that "the antenna is mounted on a mast in a similar manner as for measurement of AF". Antenna VSWR measurement configuration hence emulates the configuration of measuring antennas on test sites for EUT testing. Uncertainty estimates require antenna output to measurement system input mismatch evaluation, however it's unclear that the return loss / VSWR measurement taken for MIU evaluation necessarily aligns with accepted antenna return loss / VSWR measurement practices in accordance with antenna calibration standards.	Best practice is following accepted antenna VSWR measurement techniques from CISPR 16 for measurements for the purposes of MIU evaluation i.e. specify that MIU evaluation shall use values obtained according to CISPR 16-1-6:2014 Annex A.8.7.	Noted 4.6.3 already asks for A.8.7 of CISPR 16-1-6 and 9.2.8.2 (and 1.6) already ask that the MIU calculation must be based on the actual test setup used.
UL-9	1766	5.1.2.1		E	Do we need to define DC Network. We don't want this to be confused with a DC power device that gets it power from another device ((aka USB device that is plugged into a laptop or similar device).	Consider adding a defintition for DC Newtork powered EUT.	Partially accepted (To note that first paragraph already excludes USB and such scenarios.) 5.1.2.1 will be renamed "General" and a 10% tolerance will be required for both DC and AC, thus rendering unnecessary to use the term "DC network".

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AG-17	1782	5.1.2.2		T	This requirement is far too draconian, to have to measure the voltage for test configuration. It is adding little value but takes a significant period of time. *The voltage level and the frequency of the ac mains power supplied to the EUT shall be verified to be within the tolerances specified in this subclause at the ac mains power input of the EUT,* ***for each test configuration****, with the EUT operational.*	*The voltage level and the frequency of the ac mains power supplied to the EUT shall be verified to be within the tolerances specified in this subclause at the ac mains power input of the EUT, for a typical test configuration, with the EUT operational.*	Partially accepted "for each test configuration" will be deleted.
AG-18	1768	5.1.2.2	Entire section	T	This requirement is far too draconian and over specified without any evidence what is currently required. *Sufficient ac power shall be available to operate the EUT at its rated voltage, current, power, and frequency.* If it is sufficient for DC supply network to be with 10% for the specified voltage why can't AC. *For EUT powered from a DC network, the voltage supplied to the EUT power input port, while the EUT is in its normal operating mode, shall be within ± 10% of the voltage specified for the EUT.* We may want to specify consider that 115 V etc should be used but this can written much more simply. In addition, the document also states this… *The EUT and its auxiliary equipment shall be operated at the* ***rated (nominal) operating voltage,*** *operating temperature, and typical load conditions—mechanical, electrical, or both—for which they are designed. Loads may be actual or simulated as described in the individual equipment requirements.*	<u>Replace 5.1.2.2 with the following…</u> For single phase equipment, for EUT powered from an AC network, the voltage supplied to the EUT power input port, while the EUT is in its normal operating mode, shall be within 120 V ± 10%. For multi phase equipment. for EUT powered from an AC network, the voltage supplied to the EUT power input port, while the EUT is in its normal operating mode, shall be within ± 10% of the relevant votlage (for example 240 V, 208 V, 480V or 600V).	Accepted in principle The 5% is what power companies are required to provide at the end-user point through the electrical code in NA. However, the required tolerance will be relaxed to 10% and the 5% will only be recommended.
AG-19	1827	5.1.4.1		T	excessively large EUTs is a undound requirement	Define what meant by excessively large.	Partially accepted The sentence was deleted and the requirement for a turntable was changed to a recommendation.
UL-10	1919	5.2.3.2		T	What is low impedance defined as?	In context, the LISN must be bonded with 2.5milliohm or less. Is low impedance more than this or less then this? Should we define this to be the same impedance bond as the LISN?	Accepted Text aligned with 5.2.4.2 (see also DZ-1).

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UL-11	1941	5.2.4.2		E	Third sentence is repetitive from line 1883, clause 5.2.2	Suggest removing the repetitive text.	Not accepted (line number is 1942, not 1941) 5.2.2 is about the earthing of the ground plane, while 5.2.4.2 is about bonding the LISN to this ground plane. So, technically, from the LISN to the earthing point there can be twice this impedance. Imposing 2.5mΩ to the entire path will be too stringent.
David Zimmerman-1	1942	5.2.4.2		T	This text includes a requirement for the bonding resistance between the LISN case and the ground plane.	Add a requirement that the value of the LISN-GND bonding resistance is documented in the test report.	Partially accepted Text added to require recording this impedance, but not necessarily in each test report.
BB - 8 (Apple)	1942	5.2.4.2	Par. 1	T	Statement: “The bond used shall have a dc resistance of less than or equal to 2.5 mΩ”. It isn’t specified if this is the bond between e.g. LISN housing/chassis and RGP, disturbance measuring port outer conducting shield and RGP, etc.	Specify that the bond is measured between disturbance measuring port outer conducting shield and RGP.	Partially accepted The bond resistance specification applies between the LISN case and RGP. First sentence will be updated to clarify this.
David Zimmerman-2		5.4.4.1 and 5.5.1		T	There is no requirement to document the size of the validated test volume. This is important to know if the volume encompasses the EUT.	Add a requirement that the size of the validated test volume is documented in the test report.	Not accepted This needs to be addressed in the site validation standard (C63.25.1/2).
DW1 (Apple)	2022	5.4.4.1		T	More guidance should be provided with regard to site validation measurements where dual antennas are utilized. It is not clear from the text in ANSI C63.4, or C63.25.2, if the site validation requirements must be met in each measurement axis with the receiving anrtennas of both measurement axes in place.	Provide additional text to confirm how dual antennas should be configured when site validation measurements are performed on individual (of multiple) measurement axes	Not accepted This is in the scope of C63.25.2, not C63.4. That standard already mentions multiple axes. If more details are needed for this scenario, they should go in C63.25.2, not in C63.4.
UL-12	2054-2061	5.5.1		T	Why reference CISPR 16-1-4 when we have C63.25.1 for site validation from 1-18GHz.	Change references to C63.25.1	Accepted
UL-13	2071	5.5.1		T	Why reference CISPR 16-1-4 when we have C63.25.1 for site validation from 1-18GHz.	Change references to C63.25.1	Accepted

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AG-21	2163	6.2.3.1		T	Consider changing the formatting of the this section to be in line with the section modules.(6.2.4)… This will remove the conflict of basically stating that you have to follow the 2 dB rule, which is what the current text implies…	Align it to this format … b) For configurations with multiple plug-ins (modules), if the EUT is not tested under worst-case conditions, with a *full complement* (representative of typical configurations: see 3.1) of identical plug-ins (modules), then one of the following four options shall be applied: 1) the *2 dB rule* process described in Annex J; 2) the process described at 6.2.4d); 3) the analysis described at 6.2.4e); or 4) the compliance file (see 3.1) shall include the justification for using an EUT configuration that is not representative of typical configurations, as described at 6.2.4f).	Accepted
AG-20	2318	6.2.3.4.3		T	Suggest we align more closely with CISPR 32 with regard to all cables being placed from 10mm to 150mm. There are not many locations that have a bare metallic floor. Most will have some sort of covering.	*Replace* Cables that reach the floor (i.e., power cord when not routed straight to the LISN and all cables connected to remotely located SE) shall be placed directly on the ground plane (below 1 GHz) or floor (above 1 GHz) if they are normally placed directly on the floor in typical installations. Otherwise, such cables shall be insulated from the ground plane by up to 15 cm of insulating material. This is illustrated in Figure 10. The insulator thickness shall be document in the test report. *With* Cables that reach the floor (i.e., power cord when not routed straight to the LISN and all cables connected to remotely located SE) shall not be placed directly on the ground plane (below 1 GHz) or floor (above 1 GHz) but insulated from the ground plane (or floor) by up to 15 cm of insulating material. This is illustrated in Figure 10. The insulator thickness shall be document in the test report. Delete the note … NOTE—Shielded cables placed directly onto the metallic .. And other references within the document to directly placement on the groudplane.	Accepted However, “shall not be placed” was as “shall be placed” while “directly” was deleted. Similar change also in 6.2.3.4.4 and in multiple figures (in their footnotes) in 6.4.

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JC - 2 (Apple)	2322	6.2.3.4.3	Par. 6	E	Statement: “The insulator thickness shall be document in the test report.”	Change to statement: “The insulator thickness shall be *documented* in the test report.”	Partially accepted This was changed to a recommendation.
BB - 9 (Apple)	2480-2483	6.2.6	Par. 1	G	No length limitations are specified for the grounding terminal bonding connection.	Specify a length limitation on the grounding terminal bonding connection e.g. equal length to AC power line length.	Not accepted This depends on the specific EUT. The grounding wire is not necessarily the same length as the AC mains power cable (some EUTs do not even have AC mains cables, but might still have grounding connection).
BB - 10 (Apple)	2493-2494 3505	6.2.8 9.1	Par. 1 Par. 1	G	In addition to “warm-up time”, EUT running-in time as described in CISPR 16-2-3:2016 Subclause 6.4.4 should be included in the test report as well.	Require that EUT running-in time is defined and included in the compliance test report.	Not accepted This sentence was deleted. Considering how temperature affects test equipment is already in 4.6.1.
JC - 1 (Apple)	2493, 3919, 3505	Various		G	Warmp up time is decribed as “allow a sufficient period of time for the unit to warm up or “equipment shall be operated until temperature stabilizes”	Add warm up in definitions, maybe clarify or add boot up time	See BB-10.
BB - 11 (Apple)	2649	6.3.3.1	Par. 4	E	Statement: “The insulator thickness shall be document in the test report.”	Change to statement: “The insulator thickness shall be *documented* in the test report.”	Accepted A new sentence was added to allow reporting the average or approximate thickness value, since this can shrink when heavy equipment is placed on it.
BB - 12 (Apple)	2815-2816	6.4	Figure 10	G	The figure shows that a maximum insulation thickness for floored cables used with tabletop EUT’s is up to 15 cm, however, there’s no corresponding text which states this requirement.	Add to Subclause 6.3.2.1 a similar statement as written in Subclause 6.3.3.1 Paragraph 2 addressing EUT cabling: “If necessary to prevent direct metallic contact of the EUT *cabling* and the ground plane, insulating material up to 15 cm thick (see row #1 of Table B.1 for the allowed tolerance) shall be placed under the EUT *cabling*.”	Not accepted All cable requirements are in 6.2.3 and its subclauses. This requirement is in 6.2.3.4.3, which is also cross-linked by footnote 7 of Figure 10.

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Harry Hodes-1		8.3			I am particularly concerned about the ongoing and seemingly endless debate on the topic of "bore sighting" or "tilting": or "aiming" of receive antennas. I am sure that most of you all are aware of my opposition to the idea of doing away with this practice. I chanced upon a letter (paper) entitled: *"Impact of Antenna Tilt on Measurements Below 1 GHz in Semi-Anechoic Chamber"* by Krzysztof Sieczkarek and Adam Mackowiak of the Poznan Institute of Technology. This appeared in the I*EEE Letters on Electromagnetic Compatibility Practice and Applications, Volume 5 No. 2 July 2023*. The authors used a York CNE III Comparison Noise Emitter and three different sized commercially-available digital televisions (28-inch, 32 inch, and 43 inch diagonal sizes) for EUTs in their study. They directly compared measurement results taken using the CISPR Method (i.e., with no tilt of the receive antenna) to the ANSI C63.4-2014 Method (i.e., with tilting of the antenna).	Prior to moving forward with submitting a draft of the latest version of ANSI C63.4 for a formal vote by the SC and/or the Main Committee, I would strongly urge the WG to directly contact the authors (whose e-mail addresses are listed in the Letter) and arrange to have them give a TEAMS or ZOOM meeting-based presentation on the work they did on this letter, AND on their on-going work which addresses the same topic at frequencies above 1 GHz. To refuse to do this would be intellectually dishonest.	Not accepted This topic will be considered for the next edition, after this one (already on the list of items for next edition).
Mark Arthurs-2	3339	8.4		T	8.2.4 of ANSI C63.4-2014 had the following option for large EUT. “Moving the measurement antenna over the surfaces of the four sides of the EUT or another method of scanning of the EUT is required when the EUT is larger than the area covered by the beamwidth of the measuring antenna at the specified distance. “Keep the option to scan the surface for large EUT when the beamwidth is not large enough to encompass the EUT in ANSI C63.4-2019”	Please change from: 3) If the width of the EUT is not encompassed in the antenna beamwidth, then a larger beamwidth definition may be used [see 8.4a)2)i)] or other investigations should be carried out to determine the highest EUT emission level. To: If the width of the EUT is not encompassed in the antenna beamwidth, then a larger beamwidth definition may be used [see 8.4a)2)i)] or other investigations (such as scanning the surface for large EUT) should be carried out to determine the highest EUT emission level.	Partially accepted The item 8.4d)3) was deleted (there is no longer a requirement for the 3dB beamwidth of the antenna to encompass the entire EUT). However, that text was moved at the end of 8.5.1f), after it was corrected and updated with the proposed parenthesis (shown in red in the proposal).

Name and number	Line number	Clause/ Subclause	Par., Fig., Table	Type	Comment	Proposed change	Proposed resolution by the chair on each comment submitted
Harry Hodes-2		8.4	d)4)		Same as for 8.3 (antenna tilting)	See above	Not accepted The WG discussed this topic at length and the arguments were all for removing the tilting (such as site validation procedure; risk of exacerbating the ground bounce, which does not reflect the true EUT emissions; benefits of harmonizing with CISPR; etc.).
AG-22	3633	9.2.8.4		Editorial	Standard only deals unintentional radiators	Delete unintentional radiators and in other parts of the document.	Accepted in principle All instances of “unintentional” have been reviewed and some of them modified.
JC - 3 (Apple)	4279	Annex B	Table B1		It only refers to floor standing	add “Table top and Combination equipment” in Table B1	Not accepted Assumed that the comment refers to item 1 listed in this table. In case of tabletop EUT, the up to 15cm spacing only applies to its cables, since the EUT itself must be on an 80cm tall table (see item 4 in this table).
BB - 13 (Apple)	4303	B.2	Table B.4	T	“Measurement distance” from “1 m to 30 m” has a general tolerance of 10 cm for all distances. It would be more suitable to define the tolerance as a percentage of the measurement distance.	More appropriate to define distance specific tolerances i.e. defined in terms of a percentage e.g. 1%.	Not accepted Aligned with CISPR 32.
BB - 14 (Apple)	5606-5608	L.1.2	Par. 5	T	The associated subclause in ANSI C63.5:2017 extends beyond 200 MHz, up to 300 MHz, a typical upper operating frequency for commercially available biconical antennas for which symmetry evaluation is significant, due to asymmetry introduced by the addition of the Schwarzbeck patented bar element joining a cage wire element to the center wire element so as to control resonance near 300MHz.	Increase the required upper frequency for antenna symmetry measurements from 200 MHz to at least up to 300 MHz.	Not accepted The symmetry errors are mostly relevant below 200 MHz. The same was implemented in clause 4, for antenna calibration requirements.

Name and number	Line number	Clause/ Subclause	Par., Fig., Table	Type	Comment	Proposed change	Proposed resolution by the chair on each comment submitted
BB - 15 (Apple)	5665	L.3.2	Par. 2	T	Statement: “To minimize measurement uncertainty, the AUT should be calibrated with the AIMP attenuator attached.” Antenna output VSWR as specified in Subclause 4.6.3 “shall be measured in accordance with A.8.7 of CISPR 16-1-6:2017-01”. Hence the AIMP if used shall be included in the CISPR 16 antenna calibration test set up, attached to the antenna during calibration.	Change “should” to “shall”.	Not accepted Per the first paragraph, this attenuator (called “AIMP”) is specific for the Annex L procedure. However, the sentence was deleted as there is no requirement to minimize measurement uncertainty in this document.