

DRAFT STANDARD PUBLIC COMMENT SUBMISSIONS

**General Comments
Summary Table**

SUBMISSION	COMMENT	WG ACTION
006, 008, 017, 020, 021, 022, 025, 036, 039, 040, 041, 042, 043, 044, 045, 051	<p><u>Pro-forma submission.</u></p> <p>Adopt an approach protective of public health by conducting (more) research on mobile phone safety and retain the existing Australian Standard in the meantime</p>	<p>There is currently no Australian RF standard, so the WG does not consider retaining the status quo to be a viable option.</p> <p>Research into the effects of RF is continuing (the Government has already announced a \$1 million per annum funding).</p>
007 047 057 058	<p><u>Occupational exposure levels should not be greater than general public.</u></p> <p>The stated reasons for setting exposure standards at different levels for the public and occupational are incomprehensible.</p> <p>Occupational standards should be omitted.</p> <p>The rationale for setting occupational exposure levels above the public exposure limit is not justified.</p> <p>No justification for workers being exposed to a hazard at levels higher than is allowed for the general public.</p>	<p>The WG has considered the option of a one-tier standard, but remains committed to the two-tier system.</p> <p>The standard is based on the occupational exposure levels. The public exposure limits are set a factor of five lower..</p>
005 007	<p><u>Harmonisation of standards does not justify increased exposure levels.</u></p> <p>Weak argument for the harmonisation of Standards.</p> <p>Any harmonisation process should involve the setting of standards at the lowest possible exposure.</p>	<p>The WG stated that the RF standard is necessarily a very technical document and agreed that there was a need for some supporting documentation, written in plain English, to accompany it. It was noted that the standard is based on health effects and as such the exposure limits are set at a level that is considered safe.</p>
007 009 011 014	<p><u>A Precautionary Principle must be applied.</u></p> <p>A “Precautionary Approach” is only mentioned in an Annex and is not recommended in the body of the Standard.</p> <p>Stronger precautions must be included in the document.</p> <p>Inadequate precautionary approach.</p> <p>Cautious approach when setting a minimum standard.</p>	<p>The public submissions regarding the application of a precautionary principle were vigorously debated by the WG.</p> <p>Some members of the WG expressed the opinion that the appropriate place for the expression of a precautionary principle is in codes of practice and that they have no place in a health-based standard. There was some concern that advocating a precautionary principle would detract from the scientific basis of the exposure levels and make</p>

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<p>026</p> <p>027</p> <p>028</p> <p>031</p> <p>033</p> <p>034</p> <p>046</p> <p>047, 055, 060</p>	<p>Should be taking a totally precautionary approach until further research is complete.</p> <p>The benefit of any doubt must be given in the interests of public safety. There is need for the precautionary principle to be read as an integral element and not added as an aside.</p> <p>The standard must address this issue by retaining the exposure limits of the AS2772.1 standard and introducing precautions that require radiofrequency emitting devices and infrastructure to operate at the lowest possible power. The body of the document must include a strong precautionary approach that indicates the limitations of the science on which it is based and recommends that real life exposures be kept as low as practically achievable. There is a need for the standard to implement additional precautions and safety factors that guarantee a greater level of public health protection.</p> <p>Since the scientific evidence is inconclusive a more precautionary approach must be adopted for the protection of all Australians.</p> <p>Prudence must be adopted in the management of public health and radiation exposure.</p> <p>Precautionary approach should be emphasised.</p> <p>The draft Standard should verge on caution in favour of the public.</p> <p>A Precautionary Principle must be applied.</p>	<p>compliance with the standard more difficult to assess.</p> <p>Other members of the WG called for a precautionary principle to be mandated by the standard, rather than be left to voluntary codes of practice. It was pointed out that the NZ standard does mandate the use of a precautionary principle. The WG finally reached agreement on the inclusion of the following precautionary clause:</p> <p>“minimising, as appropriate, radiofrequency exposure which is unnecessary or incidental to achievement of service objectives or process requirements, provided this can be readily achieved at reasonable expense. Any such precautionary measures should follow good engineering practice and relevant codes of practice. The incorporation of arbitrary additional safety factors beyond the exposure limits of this Standard is not supported.”</p>
<p>048</p> <p>054</p> <p>058</p>	<p><u>A Precautionary Principle must be applied (continued).</u></p> <p>The Stewart Report is the leading document regarding the Precautionary Approach applied to RFR and must be fully discussed.</p> <p>The proposed Standard does not adequately take account of the Precautionary Principle.</p> <p>An effective precautionary principle must be included in the standard and it must be</p>	<p>See above.</p>

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	mandatory that the precautionary principle be applied.	
056	<p><u>A precautionary approach should not be applied.</u></p> <p>Object to the inclusion of a precautionary approach within the Standard.</p>	See above.
009 014 016 018 028 032 035 038 047 049 054 055	<p><u>No justification for an increase in exposure levels</u></p> <p>It is inappropriate to allow the public to be exposed to more radiation.</p> <p>The minimum threshold standard should be maintained at the lower level of 200µW/cm-sq. until research is conclusive.</p> <p>Should be reducing, or at the very least, retaining the existing limits.</p> <p>Standard changes will in effect increase the levels of human exposure to RF radiation</p> <p>The document permits greater exposure, up to double for GSM and 4 ½ times as much for higher frequencies 3G technologies.</p> <p>Without firm evidence of its safety there should be no increase in the levels.</p> <p>Significant modifications to ICNIRP Guidelines without scientific justification.</p> <p>Opposed to the increase of the levels.</p> <p>No valid reasons given to support increases in exposure levels.</p> <p>The spatial peak SAR for the head and trunk represents an increase in allowable radiation to critical organs sufficient justification for the relaxation of this restriction is not provided. Until better scientific consensus is reached on likely impacts of low-level RF radiation, there should be no relaxation of current Australian exposure restrictions, particularly for the head.</p> <p>Object to any increase in exposure levels. The Draft Standard provides no details of the research supporting the proposed increase in peak exposure levels.</p>	<p>The limits of the new draft ARPANSA Standard are scientifically derived and are based on established biological interaction mechanisms and modern dosimetric data on the distribution of radiofrequency energy absorption within the human body. As defined within the ARPANSA draft, the magnitude of basic restrictions, the corresponding reference levels and the associated temporal and spatial measurement criteria are clearly appropriate. Furthermore, the ARPANSA draft standard contains additional basic restrictions to those previously specified of the now expired AS/NZS 2772.1(Int):1998. Unlike previous Australian Standards, such limits are robust and technically complete. All limits apply simultaneously and include clear margins of safety. For both the occupational and public exposure groups and for the frequency range 10 MHz to 6 GHz, the basic restrictions for Whole Body Average (WBA) Specific Absorption Rate (SAR) are identical to those of AS/NZS 2772.1(Int):1998 (ie. there is no change in the WBA SAR). However, at frequencies above 400 MHz, the reference levels of AS/NZS 2772.1(Int):1998 and previous versions of that Standard were not in accord with the clearly established dosimetry data. Such errors were compounded by in-appropriate specification of temporal averaging times (refer ARPANSA draft Standard rationale, lines 1754-1787). In particular, the method for spatial averaging of reference</p>

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<p>058, 060, 062</p> <p>065</p>	<p>Oppose any relaxation of standards for exposure to radiofrequency fields at this time.</p> <p>No valid reasons given to support increases in exposure levels.</p> <p>Given that there is no apparent evidence that the industry is being hampered by the current standards, it is not advisable to increase the allowed levels or the temporal or spatial averaging provisions.</p>	<p>levels as given in clause 2.7, is rigorous and serves to further enhance relevant safety margins. Additionally, the basic restrictions and references levels provide greater protection against pulsed emissions (eg. see tables 3, 4 and 7).</p> <p>While there are some differences from the previous Standard, the spatial peak SAR limits are based on more recent scientific data and they clearly prevent excess local heating of tissue (the instantaneous spatial peak SAR limits also prevent unwanted auditory effects). The rationale of the Standard has been modified through incorporation of additional information and the text has changed to make it more comprehensible.</p> <p>The WG acknowledges that in some cases the exposure limits are being increased, but also maintains that absorption levels are not being raised. It was felt that this point had not been communicated sufficiently clearly to the public and that the distinction between reference levels and basic restrictions had been missed. The WG recognised that supporting documentation, written in plain English, should be provided to explain the changes introduced by the RF Standard.</p>
<p>005</p> <p>026</p> <p>027</p>	<p><u>Inadequate time for comment or review.</u></p> <p>The appointment of one poorly-resourced public representative to the committee, together with poorly advertised opportunities for public comment, does not constitute adequate inclusion of the public viewpoint.</p> <p>The Draft Committee does not seem to have been given time to peruse this Draft before its appearance in the public arena.</p> <p>It seems that the actual draft for which public comment is being called may not have been fully considered by all members of the committee.</p>	<p>It was noted that the draft RF Standard was tabled at the Senate inquiry where it received considerable publicity. The draft was the subject of a Press Release, it was sent to scientific bodies and was mentioned in Microwave News. The WG also pointed out that the original two-month deadline for receipt of submissions was extended to allow late submission to all requests..</p>

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035 046	<p>ICES believes that it has many points worthy of critique and comment, but time did not permit consideration of these. ICES believes that the goal of international harmonised and rational standards for safe use of EM energy is best served if the responsible standards bodies exchange documents (proposed standards) for review in a timely manner.</p> <p>Sufficient time not given for the public to adequately scrutinise and submit appropriate comments.</p>	
056 057 064	<p><u>Inconsistent terminology.</u></p> <p>Utility may be further improved by consistency in terms, units and abbreviations</p> <p>Throughout the draft standard, there is a need for greater consistency with the use of terminology.</p> <p>Terminology needs to be consistent throughout the document.</p>	<p>The WG noted that there was scope for improvement regarding the consistent use of terminology and every attempt will be made to correct this during the review.</p>
010 056, 062 064	<p><u>Document open to interpretation.</u></p> <p>Document can be open to interpretation.</p> <p>The Standard contains some imprecise statements that are open to interpretation.</p> <p>Some terms not defined clearly enough.</p>	<p>Any obvious ambiguity will be removed from the document. The WG will seek clarification from these submitters as to which sections of the document are too vague.</p>
024 058	<p><u>Standard is difficult to interpret.</u></p> <p>The extra detail in this draft standard is informative but does make it difficult to determine the practical measurement levels.</p> <p>Document too technical and complex for the ordinary reader.</p>	<p>The WG placed technical details in the Annexes in order to minimise the complexity of the Standard. However it was agreed that the RF standard is necessarily a very technical document and that there was the need for some supporting documentation, written in plain English, to make it more accessible.</p>
007	<p><u>Maximum exposure levels should be reduced.</u></p> <p>Standard should include the least level of exposure possible to avoid harmful</p>	<p>The purpose of the draft Standard is to set the exposure levels so as to avoid any possible harmful effects. These levels have been</p>

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012 015 016 027 028 031 033 037 052	<p>effects. All precautions should be taken to avoid unnecessary exposure.</p> <p>Lower the standard from 200 microwatts/cm² to at least 5 microwatts/cm².</p> <p>In order to reflect both the current state of the science and community concern, the ALARA (as low as reasonably achievable) principle should be reflected by this document. That is, if the communications industry is able to operate at 200µW/cm² or lower, then this is where the standard should be.</p> <p>Should be reducing, or at the very least, retaining the existing limits.</p> <p>The maximum RF radiation exposures presently set in the draft standard do not provide adequate protection to an exposed public.</p> <p>The draft must reduce exposure by a factor of at least five.</p> <p>Exposure should not be increased but in fact decreased, especially in circumstances where it is likely to affect children, fetuses and the frail.</p> <p>Reduce radiation exposure rather than increase it, particularly where it affects women and children.</p> <p>Levels should be reduced not raised. There should be <i>radiation exclusion zones</i> for the frail and families with children. There should be relief time from 24 hour exposure in CBD residential dormitories and suburban quarters.</p> <p>Exposure limits should be reduced to account for resonance phenomena</p>	<p>established by taking into account the most vulnerable members of the community (although it is not always possible to accommodate hypersensitivity) and include the possibility of resonance phenomena. The WG believes that, like any standard, periodically the RF Standard will need to be revised and exposure levels may move up or down.</p>
007 011 015	<p><u>Comments regarding possible non-thermal effects.</u></p> <p>Exposure levels should take into account the non-thermal effects.</p> <p>Consideration of possible athermal effects is not factored into the standard in a tangible way.</p> <p>Concerned that the assumption is made that the only health risks would be as a result of tissue heating.</p>	<p>The WG did consider the possibility of non-thermal effects and the review of research into bio-effects at low levels of exposure is given in Annex 4. The WG could not incorporate measures to restrict low level exposure to RF, as currently there is no consistent scientific basis upon which to do so.</p>

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028 034 055 058	<p>The Rationale is based on the flawed premises that heating is the only health risk.</p> <p>Include comment re the current situation of possible effects from non-thermal levels.</p> <p>The uncertainty in relation to the biological effects at low levels of exposure (non thermal effects) is sufficient to warrant a cautious approach.</p> <p>Athermal effects not considered.</p>	
005 009 010 011 027 029 038	<p><u>Comments regarding citation of literature</u></p> <p>It is implied that data for bio-effects above reference levels is complete. That would be incorrect and misleading. When all the peer-reviewed literature is considered there is insufficient scientific basis for setting safe exposure levels. A serious omission from this draft is any mention of the relevance of the literature on ‘acceptable risk’, despite its clear applicability in this case. Incorrect references to ‘International Standards’. There are International Guidelines, but no International Standards referred to. The usual definitions of Guidelines and Standards should be upheld. ICNIRP, for example, is a Guideline.</p> <p>There has been much more research into the thermal and athermal effects than is indicated in the draft Standard.</p> <p>The limits of RF exposure may be based on incomplete or guessing research or on selective research activities.</p> <p>The wording of the foreword should be altered to acknowledge that there is no simple scientific agreement on the health implications of non-thermal biological effects.</p> <p>Data derived from epidemiological, animal and cellular studies have been interpreted selectively.</p> <p>Quite a large number of references and case studies indicating health effects are included in this submission.</p>	<p>The WG acknowledged that the terms ‘guideline’ and ‘standard’ have very specific meanings and will only be used in the correct context within the draft.</p> <p>The WG rejected the assertion that the scientific literature had been cited selectively. Authoritative reviews and relevant new research papers have been used.</p> <p>The WG noted that while anecdotal evidence may be interesting and indeed can be important for setting the direction of research, it is also difficult to interpret and is not useful for setting a standard.</p>

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057 062	<p>This submission includes accounts of symptoms the author experiences when exposed to RF.</p> <p>The redrafting of the standard should take into account the findings of the Senate inquiry, the outcomes of the recent conference “the Radiofrequency Spectrum – managing community issues” and other relevant research results published since the release of the draft.</p> <p>Need to be consistent with regard to what standard of research is cited</p>	
005 009 028	<p><u>Disputing the assumptions of the Standard.</u></p> <p>Disagree with the assumption that there is sufficient evidence for a valid standard that includes specified ‘safe’ exposure levels.</p> <p>There remain significant concerns about the assumptions that underlie the proposed standard.</p> <p>The Rationale is based on the following flawed premises:</p> <ol style="list-style-type: none"> 1. Heating is the only health risk. 2. The body can safely absorb 4 W/kg & parts of it 100 W/kg. 3. “Safety factors” provide additional protection. 4. We can average exposure over time. 5. We can average exposure over mass of body tissue. 	<p>Members of the WG believe that the evidence currently available is sufficient to set an RF standard.</p> <p>The WG pointed out that the proposed limits are more detailed than implied by these submissions. The peak SAR limit effectively constrains whole body exposure and has been introduced as a basic restriction in the draft standard.</p> <p>Averaging times must be specified. (eg refer http://www.arpana.gov.au/mw_averaging.htm). Measurement averaging times for both WBA SAR and spatial peak SAR are based on the relevant thermal equilibration time, consistent with heat flow parameters. Averaging times for other limits are consistent with relevant mechanisms. For example an averaging time of 100 microsecond corresponding to fastest nerve reaction period is required to protect against low frequency electro-stimulation effects.</p>
001 010	<p><u>Comments regarding specific guidelines/procedures for measurement of RF.</u></p> <p>Make Annex 5 more complete with a set of guidelines or procedures.</p> <p>Lack of exact measuring techniques and procedures.</p>	<p>The WG made the point that the proposed RF standard is not a measurement standard and as such it is not within the scope of this document to prescribe measurement guidelines. Annex 5 was included in the document in order to provide</p>

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013 023 032 053 057 063	<p>No test method for measurement of contact and limb current reference levels is described in the text.</p> <p>If the application of basic restrictions is to be practical in a case-by-case assessment of machines, a more specific instruction is needed to guide the measurement. An additional normative section should be provided that gives instructions on the procedures to be adopted to estimate induced body currents in a practical case. This section should specify the conductivity (ies) to be used and the location of measurement points with respect to the human workspace.</p> <p>A prescribed list of measuring equipment to test compliance with the Standard should not remain mandatory, it must be subject to review as improved instruments become available.</p> <p>Guidance in the standard regarding methods and equipment suitable to measure or evaluate instantaneous field levels would be helpful.</p> <p>Need to include guidance on assessment/measurement to verify compliance: when, how, by whom? The Standard does not supply sufficient guidance on the application of the occupational and general public exposure limits.</p> <p>Type testing is not sufficient as equipment may degrade with use.</p>	<p>supplementary information and to direct interested readers towards appropriate sources of information.</p>
007 011 015 028	<p><u>Whole body and spatial peak SAR.</u></p> <p>How can some parts of the body be exposed to different levels?</p> <p>The draft operates under the questionable assumption the certain parts of the body can safely be exposed to 25 times as much radiation as the whole body and the body will dissipate the heat.</p> <p>That the exposure criteria allow for some parts of the body - ie the brain - to be exposed to up to 25 as much radiation as the rest of the body.</p> <p>The Rationale is based on the flawed premise that the body can safely absorb 4</p>	<p>The WG noted that the restrictions on peak SAR are an important complement to the whole body average restriction. It was also pointed out that whole body and local heating are quite different in their effects upon the human body.</p>

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030 046 054	<p>In view of possible cumulative effects, limits for total dose (annual average exposure) should be set. This would be based on worse case epidemiological findings.</p> <p>The stated absorption of 0.08 W/kg when applied to residents, over a long period, from a close by tower is far too great.</p> <p>The proposed standard only deals with a maximum average six minute exposure (ie. peak). There is no reference in the proposed standard to a maximum annual average exposure level.</p>	maintains that the proposed limits are sufficient.
014 024 028 057	<p><u>Mobile phones and base stations.</u></p> <p>Protocols should be developed in consultation with industry as well as community and openly followed before permission is given to the installing of a new telecommunications tower.</p> <p>Mobile phone compliance appears vague.</p> <p>That all mobile phone be required to comply with the exposure limits of the standard.</p> <p>Due to public concern regarding mobile phone risks, the standard should include more specific information on mobile phones.</p>	The WG agreed with the sentiments expressed by submission 014, however it is not within the scope of an RF standard to develop such protocols. It was pointed out that no mobile phones are exempt from the exposure limits of the Standard, some may be exempt from SAR testing if their output is low.
019 023	<p><u>Distinction between head/torso and extremities.</u></p> <p>The draft Standard does not fully distinguish between extremity exposures and head/torso exposures.</p> <p>The draft does not treat the case of field exposures that are centred on the hands. Table 4 'Basic Restrictions for Instantaneous Spatial Peak Current density in the Head and Trunk' should be expanded to cover the arms, hands, legs and feet (i.e. the extremities).</p>	The WG acknowledged that, for low frequencies, the radius of tissue involved in the extremities ensures that it is generally impossible for induced currents to form, due to a H-field, and the penetration of an E-field into the body is small, therefore contact currents are the main concern. The WG agreed that there is scope for inclusion of restrictions specific to induced currents in the limbs.
	<u>Children.</u>	The effect of RF on immature systems is an area of continuing research, however the WG found no

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014 027	Particular consideration should be made in respect to towers sited near schools. The greater vulnerability of children finds no place in the standard.	consensus currently exists in the literature as to whether children are more vulnerable than adults. The siting of communication towers is outside the scope of the RF Standard.
007 010 047	<u>Comments on regulation and legal issues.</u> Risk assessment and management should be written into the legislation and not be self-regulated. Legal status of the draft Standard not clearly specified. Draft Standard does not clearly specify its place within Australian standardisation system (such as Australian Standards). Training in work safe practices is not mandatory and not defined.	The WG agreed that risk assessment and risk management are the province of the state regulators who will confer legal status upon the Standard. It was agreed that a list of state regulatory bodies be included in the document. Training is not the only option to ensure management of risk and hence it has not been mandated.
001 015 018 028 034 056 058	<u>Health and medical issues.</u> Effects on the eye (i.e. overheating and cataract formation) as a separate annex. The modelling techniques used are not an adequate way to measure likely health effects. Restrictions governing electromagnetic interference appear to have more attention than those governing human health Exposure limits should not be relaxed from those in the existing standard in light of the potential risks to health as a result of breaching of the blood-brain barrier and window effects at higher frequencies. Draft should mention that some individuals may be sensitive to this type of radiation. The draft is too detailed, and too prescriptive, and fails to recognise the accepted methods of medical practice for eye injury patient care. Increased involvement of public and occupational health and safety authorities.	Mandatory eye examinations have been discarded in favour of a self-administered questionnaire to determine if an eye test is required. The point of the model exam is that it provides a systematic, standardised way of recording the health status of the eye. The WG rejected the notion that EMC considerations out-weighed those of human health. The WG believes that a worst-case interpretation of the current literature indicates that breaches of the blood-brain barrier are extremely unlikely for the levels set out in the Standard. The WG agreed that the rare anecdotal evidence of RF hypersensitivity is not sufficient to form the basis of an exposure standard.

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058	<p><u>Risk management.</u></p> <p>Section 5.1 falls short of what is required in terms of full and comprehensive guidance.</p>	<p>The WG expressed the opinion that Section 5.1 should identify with whom the duty of care responsibility lies, outline the general nature of the responsibility and specify required outcomes of the risk management process.</p>
026 058	<p><u>Comments on the role of ARPANSA.</u></p> <p>ARPANSA should be extremely careful to be independent.</p> <p>ARPANSA is not the appropriate body to be setting health-based standards</p>	<p>The WG disagrees with the premise that ARPANSA is not an independent body.</p> <p>The ARPANS Act authorises ARPANSA to set health-based standards.</p>
026 027 030 049	<p><u>Safety factors.</u></p> <p>The present Draft incorporates safety factors which are based on unrealistic exposure times for the general public.</p> <p>The stated safety factor for permitted public exposure of 50 is misleading.</p> <p>Safety factors should be increased to considerably greater than 50×.</p> <p>The levels of 10 and 2W/kg provide little or no safety factors between estimated thermal effects and the proposed standard.</p>	<p>The WG believes that the safety factors, which were established on the assumption of continual exposure, are adequate.</p> <p>The SAR levels are based on temperature increases in models that do not include thermoregulation and as such are considered over-estimates.</p>
010 011 027 048	<p><u>General miscellaneous comments.</u></p> <p>A comparison with other national standards should be included along with information on how other countries deal with RF exposure.</p> <p>Failure to consider amplification of signals in the environment.</p> <p>The draft as it stands is not a <i>standard</i> but provides only <i>guidelines</i> for <i>thermal</i> exposure.</p> <p>Do not see the point of attributing any section of the draft to individuals.</p>	<p>The WG does not believe that the Standard is the appropriate place to produce comparisons with other countries' RF standards.</p> <p>The WG rejects the notion that the document does not constitute a Standard.</p> <p>The WG agreed to remove comments attributing sections of the Standard to individuals.</p>