**ATTACHMENT A: ARPANSA Specific Comments to the Draft ICNIRP RF Guidelines**

**Guidelines**

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| **Line** | **COMMENT** |
| 16-17 | Stipulate the frequency ranges for the “radiofrequency part” and the “low-frequency-part” |
| 30 | It may be useful to mention that the guidelines do apply to workers involved in medical procedures |
| 34 | Define “cosmetic procedures” to differentiate them from medical procedures e.g. is acne treatment a medical or cosmetic procedure |
| 59-64 | The explanation on ‘operational threshold’ here is unclear (better explained later in the document) |
| Page 2  Footnote | World Health Organization (2006) document does not appear in the list of references. |
| 145 | change "not sufficient" to "insufficient" |
| 260, 267 | Reference to ACGIH, 2017 which does not appear on the reference list. It is probably meant to be ACGIH 2018b. |
| 286 | Reference to “Sasaki, 2017” should probably be “Sasaki et al., 2017”. |
| 437 | Reference to “ACGIH 2017” which does not appear on the reference list. It is probably meant to be ACGIH 2018b. |
| 697-707 & 718-726 | In Tables 5 and 6, it would be better to repeat actual values rather than cross-reference to other tables |
| 711 | Note 5 is not needed as “---“ does not appear in any cell of Table 5. |
| 783 | Reference to Chan et al. (2015), should probably be dated 2013. |
| 874 | This paper is not cited in the text. |
| 881 | This paper is not cited in the text. |
| 915 | This paper is not cited in the text. |
| 966 | This paper is not cited in the text. |
| 978 | This paper is not cited in the text. |
| 982 | This paper is not cited in the text. |
| 999-1001 | This paper has already appeared in the list of references. |

**Appendix A**

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| **Line** | **COMMENT** |
| 17 & 21 | The acronym OAHET should appear on line 21 when the full term is first used, rather than line 17 (which refers to the effect rather than the threshold for the effect). |
| 28-29 | The cited reference does not contain the detailed explanations of the basic quantities listed.  Perhaps a better reference would be “Review of concepts, quantities, units and terminology for non-ionizing radiation protection” Health Physics, 49(6), 1329-1362 (1985) |
| 31-33 | This sentence is confusing and should be rephrased as:  It is noted that radiofrequency basic restrictions and reference levels are based on the lowest radiofrequency exposure levels known to cause adverse health effects; these effects are thermally mediated. |
| 71-72 | The subscripts indicating “transmitted” have been capitalised in this heading, should still read “Str” and “Htr”. |
| 91-92 | The subscripts indicating “incident” have been capitalised in this heading, should still read “Sinc” and “Hinc”. |
| 100 | Include the symbol for equivalent incident power density, “Seq”. |
| 113 | Sentence does not make sense, suggest removing the words “at the”:  e.g. transverse magnetic (TM) wave at the incident around the Brewster angle |
| 119 | Suggest removing the emotive language, delete the word “extremely”. |
| 132-146 | This paragraph cites conflicting evidence on the ability of high frequency RF absorbed near the surface to elevate core body temperature. (This reasoning is actually much better explained in section 4.3.3.1.1. of the main guideline document.) It is currently unclear why the one study on IR over-rides the two RF studies, suggest rephrasing.  The sentence beginning on line 138 should read: “However, it has also been reported that infrared radiation (IR) exposure can cause significant body core temperature elevation (Brockow et al., 2007).”  The sentence beginning on line 141 should read: “This means that despite the penetration depth of IR being very small or comparable to the high GHz radiofrequency EMFs (or millimeter waves) it is still possible for IR exposure to raise core body temperature significantly.” |
| 260 | Change “GHZ” to GHz |
| 270-1 | Reference to Hirata and Fujiwara 2009 should be to the paper listed on line 945, i.e. 2009c. |
| 273 | Reference to Hirata, Fujimoto et al., 2006 should be to the paper listed on line 922, i.e. Hirata et al.,2006a. |
| 301 | Reference to Hirata, Watanabe et al., 2007 should be to the paper listed on line 928, i.e. 2007a. |
| 302 | The papers by Buccella 2007 and Laakso 2009 are cited but not listed in the References. |
| 309 | Reference to Hirata, Fujiwara et al., 2006a should be to the paper listed on line 925, i.e. 2006b. |
| 341 | Unit should be degrees Centigrade kilogram per watt, so the “-1” should be in superscript. |
| 350 | Takei et al., 2018 is cited but does not appear in the references. It could be the paper listed on page 25 line 1037 Takei et al. (in press). |
| 354 | Change “GHZ” to GHz |
| 446 | The citation of unpublished work (Kodera et al., unpublished) does not meet the requirements of substantiated evidence as defined on page 2 lines 43-53 of the main guidelines document. |
| 456 | The citation of unpublished work (Kodera et al., unpublished) is not acceptable. It does not meet the requirements of substantiated evidence as defined on page 2 lines 43-53 of the main guidelines document. |
| 531 | Remove "characteristic" before "impedance". Word is superfluous. |
| 617 | Reference to Hirata et al., (2009) should be to the paper listed on line 942, i.e. 2009b. |
| 649 | Suggest replacing the word "maximal" with "highest" or "SAR in the fetus reaches its maximum at..." |
| 680 | Reference to Hirata et al. (2008) should be to the paper listed on line 936, i.e. 2008b. |
| 708-9 | Reference to Hirata, Asano et al., 2007 should be to the paper listed on line 931, i.e. 2007b. |
| 733-5 | This sentence is incorrect. This is not the usually accepted definition of the Brewster angle.  “The angle corresponding to the maximum transmittance is usually the angle normal to the body surface, and is referred to as the Brewster angle for a specific polarization of TM-wave incidence.”  Suggest deleting the second part of the sentence so that it reads:  “The angle corresponding to the maximum transmittance is usually the angle normal to the body surface.” |
| Line 735 | Define “TM-wave” |
| 867 | This paper is not cited in the text. |
| 934 | This paper is not cited in the text. |
| 976 | This is not acceptable for a reference: Kashiwa et al. (2018). Unpublished observations.  It does not meet the requirements of substantiated evidence as defined on page 2 lines 43-53 of the main guidelines document. Suspect that the reference listed on page 25 line 1034 may have replaced it. |
| 980 | This is not acceptable for a reference:  Kodera et al., (2018). Unpublished observations. It does not meet the requirements of substantiated evidence as defined on page 2 lines 43-53 of the main guidelines document. |
| 996 | Format of reference is different to all others:  “R Morimoto, I Laakso, V De Santis, A Hirata” should read “Morimoto, R., Laakso, I., De Santis, V., Hirata, A.”. |
| 1019 | This paper is not cited in the text. |
| 1034 | This reference is not in alphabetical order. |

**Appendix B**

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| **Line** | **COMMENT** |
| 36-37 | Unclear how observational studies “manipulate radiofrequency EMF exposure” |
| 37 | Change "generalizability" to "in making comparisons" or "applying them" or "relating them". This will make the concept more clear. |
| 84 | Replace “SARs” with “SAR” |
| 89-90 | Add brain electrical activity in the summary |
| 93 | Specify “subjective or non-specific symptoms” |
| 106 | Add “poor exposure assessment” to the methodological issues |
| 113 | Change to “deprivation in adolescents when using the mobile phone at night.” |
| 122-123 | Change to “…and as the results by Green and Akirav 122 (2010) have not been replicated…” |
| 224 | References of the two epidemiological studies on melatonin should be cited |
| 241-243 | Reference to the Danish cohort study should be cited |
| 260-1 | Reference to “Adair, Mylacraine and Cobb, 2001b” does not require the suffix “b”. |
| 263 | Change "maximal" to "maximum" |
| 284 | Change to “Those that have not demonstrated a link…” |
| 307 | Change to “…no evidence that the developmental phase is relevant….” |
| 387-390 | It would be helpful in adding a line or two why the Hardell results differ from the Interphone results (particularly with the Swedish part of Interphone which is drawn from the same population as Hardell); i.e. point out that there were methodological differences |
| 400 | Change to “….have not provided substantiated evidence of an increased cancer risk…” |