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Reading the Australian radiation protection and nuclear safety agency EME report

The ARPANSA EME Report has been developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) to ensure that information about wireless base stations and levels of electromagnetic energy (EME) are clearly provided to interested stakeholders.

An ARPANSA EME Report must be prepared for all new wireless base station installations and for upgrades of existing sites where the Mobile Phone Base Station Deployment Code 2011requires an ARPANSA EME report. The ARPANSA EME Reports are prepared by the carrier or a consultant on the carrier's behalf. This report is publically accessible via the mobile carrier's national database of all mobile phone sites, the Radio Frequency National site Archive(RFNSA- see www.rfnsa.com.au).

Mobile phone networks operate by sending radio signals from wireless base station antennas placed in strategic locations to and from mobile phones. These antennas are radio transceivers that transmit and receive electromagnetic energy in a specific surrounding area, much like other two-way radio signals.

For more information on electromagnetic energy, please refer to the ARPANSA fact sheet "Electromagnetic energy and its effects" found at
http://www.arpansa.gov.au/eme/index.cfm

EME is estimated using the mandated ARPANSA EME Report methodology. This methodology produces a predictive report based on site specific information and then adopting uniform assessment criteria. The report provides estimates based on the maximum predicted levels of EME.

The first two headings of the report provide introductory information about how the report is prepared and the EME regulations in relation to wireless base stations.
For more information about the EME exposure limits, please refer to the Australian Communications and Media Authority (ACMA) fact sheet "Mobile base stations and EME" found at
http://www.acma.gov.au/WEB/STANDARD/pc=PC_1750

Existing Site Radio Systems
This section of the ARPANSA EME Report provides information about any existing mobile telephone or other known wireless systems already operating at the specific location. This would include other carriers' operating systems.

The ARPANSA EME Report predictions take in to account the EME levels of operating systems able to be identified by the carrier at that specific location, so that the EME information provided in the Table of Predicted EME Levels is cumulative information.

Table of Predicted EME Levels – Existing
This table shows the predicted levels of electromagnetic energy from the existing site. Information about the levels of EME are predicted from beneath the proposed antennas to distances of 500m from the site.

The left side of the table shows the levels calculated in circular "bands" from the site, i.e. from the base to 5m distance, 5m to 50 m distance and so on. For example, if you were interested in the maximum predicted level of EME at a distance of 90m from the site, you would refer to the level in the 50m – 100m band. The level reported in each band is the maximum level that will occur in that band.

The right side of the table provides information about the predicted levels of EME. The information is expressed as a percentage of the Australian Government's mandated ARPANSA Standard (RPS3). This Standard provides protection for all people (including children, the infirm and the elderly) for assumed exposure 24 hours a day, 7 days a week.

The levels are predicted at interval distances from the mobile phone base station at a height of 1.5m above the ground. This table assumes that the ground level is flat. Appendix A of the EME Report may provide further information if there is a significant variation in the ground level from the site.

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Existing and proposed radio systems
This section details the existing radio systems and provides further detail about the proposed radio systems. It should be noted that this section is used when there are existing systems, rather than new facilities where there are no existing base station equipment.

Proposed radio systems
This section provides details about the operating systems that the carrier intends to install at the site. It should be noted that this section is used when there is no existing base station equipment at the site.

This information is usually expressed in terms of the identified frequency band at which the systems will operate. (E.g.) Wideband CDMA 2100 – WCDMA2100

For more information on radio frequencies and systems, please refer to the ARPANSA fact sheet "About mobile phone networks" found at http://www.arpansa.gov.au/eme/index.cfm

Table of predicted EME levels – proposed
This table provides calculations of the predicted levels of electromagnetic energy from the proposed site. This includes both the existing and the proposed installations.

The left side of the table shows levels calculated in circular "bands" from the site, i.e. from the base to 5m distance, 5m to 50 m distance and so on. For example, if you were interested in the maximum predicted level of EME at a distance of 90m from the site, you would refer to the level in the 50m – 100m band. The level reported in each band is the maximum level that will occur in that band, at a height of 1.5m above ground level

The right side of the table provides information about the predicted levels of EME from any existing radio transceiver equipment and the proposed equipment. The information is expressed as a percentage of the Australian Government mandated ARPANSA Standard (RPS3). This Standard provides protection for all people (including children, the infirm and the elderly) for assumed exposure 24 hours a day, 7 days a week.

The levels are calculated uniformly out to a distance of 500m from the base station at a height of 1.5m above the ground. This table assumes that the ground level is flat. Appendix A of the EME Report may provide further information if there is a significant variation in the ground level from the site.

The bottom of the table highlights the maximum predicted **cumulative** EME level from the site. It provides information about the maximum predicted level and the actual distance from the site at which it occurs.

The predicted cumulative levels of EME do not include any predictions from other equipment on the site other than wireless base station antennas.

Summary – Proposed Radio Systems
This section provides a statement about the maximum level of EME for the proposed site expressed as a percentage of the mandatory public exposure limits.

Appendix A: Other areas of interest
This section of the report provides information on specific locations which may be considered as an "area of interest" in relation to the proposed facility. This would include areas identified as community sensitive locations as defined in the Deployment Code consultation plan, and any other specific locations of interest to stakeholders and could be areas which may be affected by differing topography i.e. when the land is not flat.

Mobile phone carriers are required to consider areas of interest as part of their planning and consultation process. The ARPANSA EME Report can provide information about predicted levels of EME at certain identified locations such as schools, child care centres and residential addresses. Appendix A allows for up to 5 locations to be included in the report.

This section of the report can also provide predictions for situations such as land sloping upward away from the base station or for differing building heights.

For example, a primary school may be located 205m away from the base station. The report can be prepared so that the location of the school is expressed by its distance from the base station, and the predicted level of EME at that specific location is calculated and shown in Appendix A.

Similarly, if a 3 storey building is located 50m from the base station, the maximum EME levels can be predicted at an estimated height on the façade of the building, such as the balcony on the second floor. If the building was on ground level higher than the mobile phone base station, the calculations can be adjusted accordingly.

Summary
The ARPANSA EME Report is an important tool for providing the community with information about estimated levels of EME from wireless base stations. It is prepared by mobile phone carriers as part of the process for deploying mobile phone base stations.

Each report is prepared on a site specific basis following a methodology developed by ARPANSA. For more information about the methodology, please refer to the ARPANSA Fact sheet "Understanding the ARPANSA EME Report" found at http://www.arpansa.gov.au/emereports/explanation.cfm

If you have any questions about site specific reports, please refer them directly to the relevant carrier.

For more information about EME, the Australian Communications and Media Authority have a web site specifically focussing on this issue "Mobile phone towers and EME: information for Communities and Councils" which can be found at http://emr.acma.gov.au/

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