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AUSTRALIA

Information Paper

EMR Regulation in Australia

Definition:

For the purposes of this paper, EMR is to be understood to mean the unintentional and unavoidable exposure of persons to electromagnetic radiation (EMR) (or radio waves) incidental to the operation of a radiocommunications transmitter.

Introduction:

This paper provides an outline of the recently introduced EMR regulatory framework in Australia. This framework defines a standard for permissible levels of EMR exposure and establishes a requirement for all operators of radio transmitters to determine, and be able to demonstrate, compliance with the regulatory requirements.

Background:

Within the Australian regulatory framework, standards do not have mandatory application unless they are specifically called up in a formal legislative instrument. Even though there has been an Australian standard providing limits for acceptable levels of human exposure to RF energy since the 1980's, the explicit formal requirement for stations in the amateur service to comply with such a standard has been in effect only since June 2003.

The original Australian Standard governing limits to human exposure to RF energy was developed prior to the publication of an international guideline document by (originally) the International Radiation Protection Association

(IRPA) and more recently by the International Commission on Non-Ionising Radiation Protection (ICNIRP). The original Australian Standard was developed by an industry group under the sponsorship of the Standards Association of Australia (SAA). A revised Australian standard has been developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). This new standard is based directly on the current ICNIRP guidelines and was developed from the perspective of a health and medical effects view rather than the previous communications industry focus. Although ARPANSA is an Australian Government agency, responsibility for health matters lies generally with the individual state and territory governments, so the new standard did not, of itself, have mandatory application. In view of the high level of community concern about the EMR issue and the location of radio transmitter facilities, the Australian Government has chosen to implement a mandatory EMR compliance regime by means of its power to regulate radiocommunications systems.

The Australian EMR Compliance Framework:

The compliance framework consists of a number of parts – a statement of requirements, a regulatory structure and a procedure for determination and recording of compliance.

The basis of the framework is a definition of EMR exposure requirements. In Australia, this is set out in the ARPANSA standard RPS-3 “Radiation Protection Standard - Maximum exposure levels to radiofrequency fields - 3kHz to 300GHz”. This standard has been adopted by the Australian Communications Authority (ACA) as the definition of EMR exposure requirements for communications equipment. The “Radiocommunications (Electromagnetic Radiation – Human Exposure) Standard 2003” establishes transitional provisions and measurement methods to be used in application of the ARPANSA standard..

The regulatory requirement to comply with the requirements of the standard is achieved by means of a Licence Condition attached to each radiocommunications licence. In the Australian radiocommunications regulatory arrangements, Licence Conditions are the means of defining the privileges associated with a licence and also identifying any restrictions on the operation of the licensed transmitter facilities. Licence Conditions can cover a broad range of issues and need not be limited to aspects such as available frequencies or power limits. The scope of Licence Conditions is defined in the Radiocommunications Act 1992 which permits the ACA to make Determinations imposing additional Conditions on Licences. For the Amateur Service, the applicable specific Determination is the “Radiocommunications Licence Conditions (Amateur Licence) Determination No 1 of 1997” (the Amateur LCD). The general conditions in “Radiocommunications Licence Conditions (Apparatus Licence) Determination 2003” (the Apparatus Licence LCD) are also applicable. It is this document that imposes the requirement for compliance with the ARPANSA EMR exposure standard.

This approach of defining the compliance obligation by means of a condition attached to licences makes the EMR Framework different from other compliance requirements. Within the Australian radiocommunications regulatory arrangements, compliance obligations are normally imposed on the manufacturers and suppliers of equipment, however, the EMR Framework imposes the compliance obligation on the station licensee. This is an intentional variation that has been implemented because the actual exposure conditions are directly controlled by the installation and operation of the transmitter systems.

It is to be noted that while the ARPANSA standard defines exposure guidelines for both occupational and general public exposure levels, the ACA's EMR Framework is based only on compliance with the General Public exposure limits.

It is an unstated, but self-evident, requirement that all transmitter facilities must comply with the requirements. There are no provisions for licensed transmissions to operate in such a way as to produce general public EMR exposures in excess of the specified limits.

Compliance Procedure and Record Keeping:

The procedure for determination of compliance is also set out in the Apparatus Licence LCD. This procedure defines the methods that are to be used to determine compliance with the exposure standard and the records that are to be kept of the compliance determinations process.

The Apparatus Licence LCD establishes two levels of compliance and record keeping requirements.

Level 1 covers lower powered installations (defined as average output power not more than 100 watts and antenna inaccessible to the general public, or average eirp not more than 3200 watts and antenna at least 10 metres above ground level). This level encompasses the majority of amateur installations. It is necessary for stations in this category to comply with the EMR limits but there is no requirement for formal record keeping.

Level 2 covers higher power installations and will include some amateur installations such as those operating with full legal limit output power and high gain antenna systems (for example, EME operations, or VHF/UHF tropospheric weak signal DX using long-yagi antennas). Stations in this category must use a formal method of compliance determination as specified in the Apparatus Licence LCD and must keep, and make available, formal records of the compliance determination.

Compliance can be determined by measurement, calculation or the use of pre-calculated charts and graphs as selected by the licensee. The ACA has provided

“self-assessment” materials in the form of tables and charts that can be used by licensees to undertake the compliance assessment. The tables and charts cover the majority of apparatus licensed installations and for the amateur service cover the commonly used combinations of frequency band, output power and antenna gain. The amateur service assessment materials are based on similar charts compiled by the FCC but amended to reflect the exposure limits in the ARPANSA standard. (At the time of writing this paper, the amended materials are not available on the ACA WWW site.) Since the ARPANSA standard is derived from the ICNIRP Guidelines, the assessment material would be useable in other places that also have EMR exposure limits based on the ICNIRP Guidelines.

Useful Resources:

<http://www.arpansa.gov.au/pubs/rps/rps3.pdf>

http://www.aca.gov.au/aca_home/legislation/standards/emrstd1_2003.pdf

or http://www.aca.gov.au/aca_home/legislation/standards/emrstd1_2003.rtf

http://www.aca.gov.au/aca_home/legislation/radiocomm/determinations/lcd/amateur.htm

http://www.aca.gov.au/aca_home/legislation/radiocomm/determinations/lcd/applcd.htm
