QUESTION ITU-R 210-4/1[[1]](#footnote-1)\*

Wireless power transmission

(1997-2006-2007-2012-2022)

The ITU Radiocommunication Assembly,

considering

*a)* that wireless power transmission (WPT) is defined as the transmission of power from a power source to an electrical load wirelessly using an electromagnetic field;

*b)* that technology is under development to transfer power efficiently from one location to another using wireless methods;

*c)* that such WPT technologies may be useful in several applications including solar power, airborne platforms, lunar stations, electric vehicles, Internet of Things (IoT) devices and wireless charging of mobile / portable devices;

*d)* that WPT is not a defined radio service in the Radio Regulations (RR);

*e)* that no frequency bands have been specifically associated with WPT technology;

*f)* that WPT is considered to be either one of the electrical apparatus that are referred to in RR No. **15.12** or industrial, scientific and medical (ISM) equipment referred to in RR No. **15.13[[2]](#footnote-2)\*\***;

*g)* that WPT technologies utilize various mechanisms, such as transmission via radio frequency beams, inductive, resonant and capacitive coupling;

*h)* that technical characteristics have been developed for various WPT applications and technologies;

*i)* that some WPT applications using the characteristics referred to in *considering h)* have already been deployed;

*j)* that issues of non-ionizing radiation exposure related to systems employing WPT technologies are dealt with by such organizations as the World Health Organization (WHO) and the International Radiation Protection Association (IRPA)/International Commission on Non‑ionizing Radiation Protection (ICNIRP),

noting

1 that in response to a previous version of this Question there are a number of existing ITU-R Recommendations and Reports[[3]](#footnote-3) which cover various aspects of wireless power transmission systems;

2 the WRC-19 decision on WPT-EV (see [WRC-19 Document 237](https://www.itu.int/md/R16-WRC19-C-0237)),

decides that the following Questions should be studied and Reports or Recommendations developed as appropriate, including taking into account the Reports and Recommendations in noting 1

1 What kind of applications and electrical apparatus are WPT considered to be? What radio frequency ranges are used for each category of WPT application?

2What are the technical and operational requirements to ensure that radiocommunication services are protected from harmful interference caused by WPT operations ?

further decides taking into account the existing Reports and Recommendations as listed in noting 1

1 that the newly developed WPT applications and technical and operational characteristics of WPT technologies should be included in existing or new ITU-R Reports and /or Recommendations;

2 that the results of the additional studies should be included in existing or new ITU-R Reports and /or Recommendations;

3 that the WPT technical and operational aspects related to the protection of radiocommunication services should be included in ITU-R Reports and /or Recommendations;

4 that the suitable frequency ranges for harmonized WPT operations should be included in ITU-R Recommendations;

5 that the above studies should be completed by 2027.

Category: S3

1. \* This Question should be brought to the attention of the International Maritime Organization (IMO), the International Civil Aviation Organization (ICAO), the International Electrotechnical Commission (IEC), the International Special Committee on Radio Interference (CISPR), the Scientific Committee On Frequency Allocations for Radio Astronomy and Space Science (IUCAF) and Radiocommunication Study Group 3. [↑](#footnote-ref-1)
2. \*\* RR No. **15.12** (Edition 2020): Administrations shall take all practicable and necessary steps to ensure that the operation of electrical apparatus or installations of any kind, including power and telecommunication distribution networks, but excluding equipment used for industrial, scientific and medical applications, does not cause harmful interference to a radiocommunication service and, in particular, to a radionavigation or any other safety service operating in accordance with the provisions of these Regulations.

   RR No. **15.13** (Edition 2020): Administrations shall take all practicable and necessary steps to ensure that radiation from equipment used for industrial, scientific and medical applications is minimal and that, outside the bands designated for use by this equipment, radiation from such equipment is at a level that does not cause harmful interference to a radiocommunication service and, in particular, to a radionavigation or any other safety service operating in accordance with the provisions of these Regulations. [↑](#footnote-ref-2)
3. Report ITU-R SM.2303, Report ITU-R SM.2449, Report ITU-R SM.2451, Report ITU-R SM.2392, Recommendation ITU-R SM.2110, and Recommendation ITU-R SM.2129. [↑](#footnote-ref-3)