|  |  |  |
| --- | --- | --- |
|  | ASIA-PACIFIC TELECOMMUNITY |  |
| **The 28th Meeting of the APT Wireless Group**  **(AWG-28)** |  |
| 6 – 14 September 2021, Virtual/Online Meeting | 14 September 2021 |

Source: AWG-28/OUT-11

**questionnaire on RADIO FREQUENCY beam Wireless**

**power transmission**

1. **Background**

Wireless Power Transmission (WPT) is a technology making it possible to transfer / transmit electrical energy from a power source to an electrical load without a cable interconnection. Non-Beam WPT systems using magnetic coupling and capacitive coupling technologies are already widely used for many applications, such as electric vehicles, mobile devices and consumer electric devices.

Recently, for many researches and developments regarding WPT technologies, radio frequency beam WPT using microwave radio beam is the focal point. In some countries, radio frequency beam WPT systems are already commercialized for applications to IoT sensor devices, mobile devices and other low-power devices. The new regulations specialized for radio frequency beam are also being developed in some APT countries.

In ITU-R, the report summarizing applications of radio frequency beam WPT was already published as ITU-R Report SM.2392-0, “Applications of wireless power transmission via radio frequency beam”, in 2016, and revised in 2021. Currently, ITU-R WP 1A is developing a New Recommendation ITU-R SM.[WPT.BEAM.FRQ] which clarifies globally harmonized frequency ranges of radio frequency beam WPT, and a New Report ITU-R SM.[WPT.BEAM.IMPACTS] which summarizes the results of impact studies to other radio communication services. Both of two working documents were elevated to Preliminary Draft in WP 1A meeting in 2021, and are expected to be approved in 2022. In the working document of a New Recommendation ITU-R SM.[WPT.BEAM.FRQ], some frequency ranges, such as 920 MHz band, 2.4 GHz band and 5.7 GHz band, are described as candidate recommend frequency ranges. Other frequency ranges, such as 24 GHz band and 61 GHz band, are described in the working document of a New Report ITU-R SM.[WPT.BEAM.IMPACTS].

Regarding international standardization, IEC TC 100 is developing new Technical Reports (TRs) and/or International Standards (ISs) for radio frequency beam WPT systems applied to

Audio, video and multimedia systems and equipment. CISPR B has also started to develop EMC standards for radio frequency beam WPT systems.

1. **Objective of the Questionnaire**

The purpose of this survey is to collect information from administrations on the following points regarding radio frequency beam WPT;

* Demands for radio frequency beam WPT systems and their applications,
* Status of market,
* Status of regulations,
* Assigned or candidate frequency ranges,
* Incumbent radiocommunication services to be protected from radio frequency beam WPT systems.

A new APT survey report will be developed from the results of the survey.

1. **Responsible Group**

Task Group on Wireless Power Transmission (TG WPT)

1. **Rapporteur of the Questionnaire**

Mr. Chan-Hyung Chung, [backbum@rapa.or.kr](mailto:backbum@rapa.or.kr) (Chairman of TG WPT)

1. **Meeting at which the Questionnaire was approved:**

AWG-28 Document: AWG-28/OUT-11

1. **Target Responder:**

APT Members

1. **Deadlines for Responses:**

AWG-30

**Questions**

1. Are there demands from industries and/or general users for radio frequency beam WPT systems in your country?

**<Answer>**

Yes No

1. If the answer to the question No.1 is “Yes”, what applications are (will be) equipped with radio frequency beam WPT?

Please check all relevant applications.

**<Answer>**

Sensor devices

Mobile devices, such as smart phones

Computer peripheral devices, such as wireless mouses and wireless headphones

Moving machines, such as drones

Others, please specify \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If the answer of the question No.1 is “Yes”, how do you describe the current commercialization status of radio frequency beam WPT systems/devices?

**<Answer>**

Already, on the market

Commercialization will start in a few years

Probably to commercialize in the future

No plan to commercialize

1. Can radio frequency beam WPT systems/devices be utilized in your countries’ current radio regulations?

**<Answer>**

Yes

No

1. Does your country have some plans to establish new regulations for radio frequency beam WPT systems/devices?

**<Answer>**

Yes

No

1. If the answer to the question No.4 or No.5 is “Yes”, what radio regulatory category is (will be) assumed for radio frequency beam WPT systems/devices?

**<Answer>**

ISM equipment

SRD

licenced radio equipment

un-licenced radio equipment

Others, please specify \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If the answer to the question No. 4 or No.5 is “Yes”, what frequency ranges are (will be) regulated for radio frequency beam WPT systems/devices?

Please check all possible frequency ranges.

**<Answer>**

920 MHz band, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.4 GHz band, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5.7 GHz band, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

24 GHz band, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

61 GHz band, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Others, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If the answer to the question No.4 or No.5 is “Yes”, what incumbent radiocomminication services should be protected from radio frequency beam WPT systems/devices?

Please check all possible incumbent systems and specify their frequency ranges.

**<Answer>**

Wireless LAN, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mobile communication systems, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

RF-ID, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Radio astronomy, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Amateur radio, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DSRC, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Broadcasting services, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Weather radar, please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Others, please specify incumbent systems\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

and please specify frequency range\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Do you have any study results on impact on radiocomminication services, any on-going studies, or any plans of impact studies?

**<Answer>**

Yes. We have some impact study results.

(Could you explain the study briefly?)

Yes. We have on-going studies.

(Could you explain the study briefly?)

Not yet started but, we have some plans of impact study.

(Could you explain the plans briefly?)

No.

Thank you for your cooperation.