

# Standardization and Regulation for WPT of e-mobility

- Trend of International and Domestic Standard and its relations -

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Around 2010, the deliberation of IS of WPT for e-mobility has began and by 2025 a basic set of standards of power class WPT2 (up to 7.7 kVA) was published: IEC 61980-1 (General), -2 (Communication), and -3 (Magnetic field WPT). Subsequently, in 2025, IEC 61980-4, covering up to 500 kVA, was released as PAS, and the international standards for DWPT, IEC 61980-5 and -6, were also published as PAS at the end of 2025. In March 2026, the NWIP for IEC 61980-7, which addresses bidirectional power transfer, was adopted. In ISO, deliberations on the ISO 5474 series, which uniformly handles both wireless and conductive systems, have progressed, and ISO 5474-4:2025 was issued as the successor to ISO 19363:2020. This report describe not only IEC and ISO progress but also trends in ITU, CISPR, and ICNIRP, as well as domestic and regional standards such as ARIB, SAE, UL, and GB. I willing to proposes the future direction Japan experts should take.

Figure 1 shows a diagram illustrating the collaboration of international organizations, outlining the roles and responsibilities of each organization. The creation of international standards for products is the responsibility of IEC and ISO. Figure 2 outlines the process from the New Work Item Proposal (NWIP) to the final International Standard (IS), including the Public Available Specification(PAS), Technical Specifications (TS), and finally the IS.

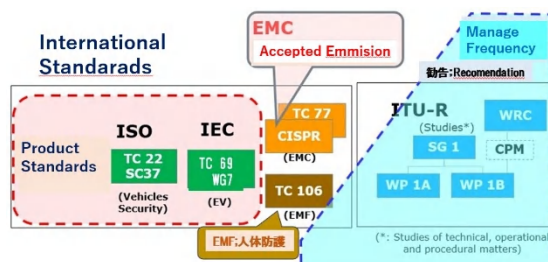


Fig.1 Relations of International Organizations



Fig.2 Process of IEC/ISO Standard

For IS for wireless power transfer, it took 15 years from the initial NWIP to the issuance of the IS set. Currently, IEC 61980-4, -5, and -6 are at the PAS stage. Furthermore, the NWIP for IEC 61980-7, for bidirectional power transfer, was adopted in March 2026, and further deliberation is awaited. At 2016 Japan MIC has modified Type approval procedure under WPT2 (less 7.7kVA). It was world first issue. After then, at 2020 SAE has released standard J2954/1 for WPT3 (upto 11.1kVA) for light duty vehicle. At Oct.2022, SAE has released J2954/2 for heavy duty vehicle upto HD-WPT9 (upto 500kW). The chase of SAE, at 2025, IEC PAS 61980-4 for Heavy Duty has released and now waiting for IS. Unfortunately Japan once led the world but now seems to be late lap.

	WPT1	WPT2	WPT3
Range of Input Volt-Amps	0 to 3.7 kVA	0 to 7.7 kVA	0 to 11.1 kVA

HD-WPT4	HD-WPT5	HD-WPT6	HD-WPT7	HD-WPT8	HD-WPT9
20 kW	50 kW	75 kW	150 kW	250 kW	500 kW

Fig.3 Power class of SAE J2954/1 and /2 for EV

Looking Figure 1, the ITU-R, responsible for frequency coordination, recommends frequencies for wireless power transfer. ICNIRP, responsible for guidelines on human protection using radio waves, they reviewed its regulatory values and is currently working towards the development of international standards for specific evaluation methods at IEC TC106. On the other hand, the CISPR's discussions, which consider coexistence with existing wireless related services and examine permissible radiation levels. They are heavily influenced by the European Broadcasting Union (EBU) and other organizations. While discussions are being moved forward in fragmented form under CISPR-B, reaching a conclusion seems to be delicate. Amidst this situation, SAE has standardized J2954/1 and J2954/2, with a view to outputting up to 500 kVA, as shown in Fig. 3. In parallel with these standardization efforts, Japan has been requested technical proposals regarding wireless power transfer infrastructure, and as of February 2026, eight proposals have been adopted, marking a move toward the widespread adoption of EVs and ERS (Electric Road System). This report expresses the hope that the younger generation will make significant contributions, including to the future international standardization of bidirectional wireless power transfer.