

Sino –Japanese ChaoJi Charging Technical Forum

国家标准GB/T 18487.1修订进展情况
Progress in the revision of the national
standard GB/T 18487.1

ZHANG Xuan

NARI Group/SGEPRI

GB/T 18487.1 revision



电动汽车传导充电系统 第1部分：通用要求 Electric vehicle conductive charging system— Part 1: General requirements

↔ IEC 61851-1 Electric vehicle conductive charging system – Part 1: General requirements



保持技术发展和标准编制的连续性和一致性。

Correction of errors and inaccuracies of the 2015 version



坚持科技创新，提升安全性和兼容性。

Improve safety and forward/backward compatibility



面向未来技术发展进行系统性考量规划。

Introduced new functions/feature with the premise of avoiding potential compatibility issues



HPC/LPC

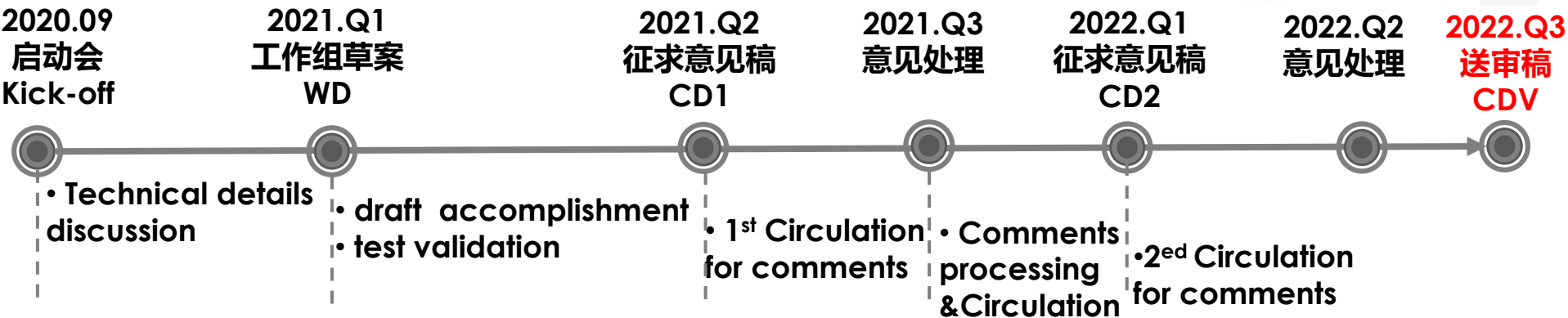


V2X

... ..



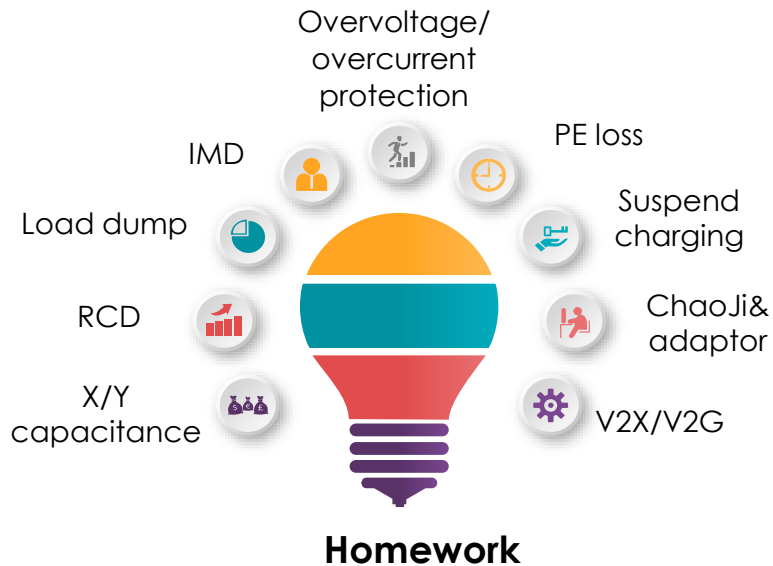
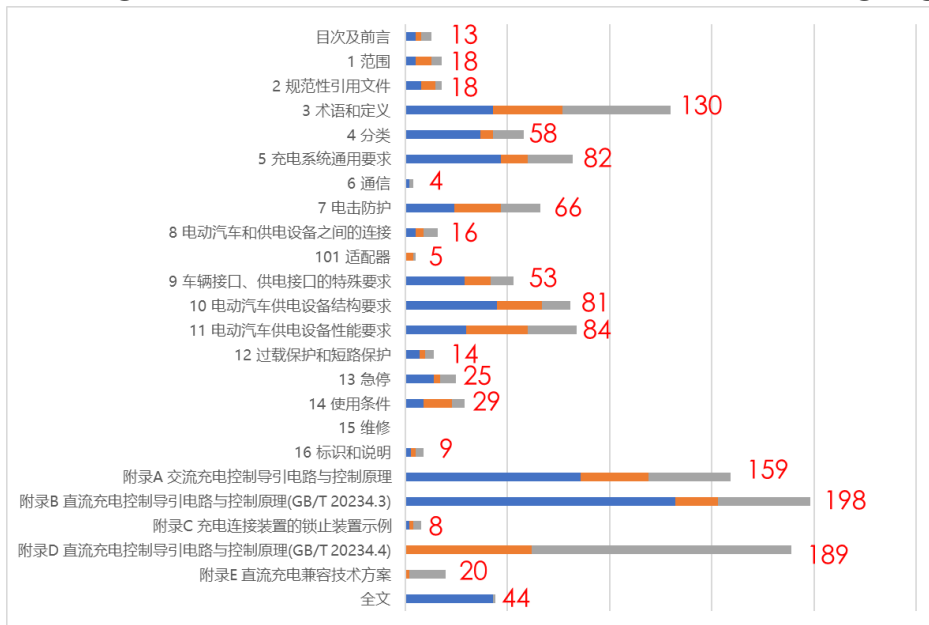
工作进展 work progress



- 参与人员：国内外充电设施制造商、车辆制造商、运营商、连接器制造商
Participants: Domestic and foreign EVSE manufacture, EV manufacture & OEM, Operator, and Charging coupler manufacture
- 从2020年开始讨论处理意见
Discussion of all received comments from October 2020 to present
- GB/T 18487.1 WG: **BJT 9:00-12:00** every Wednesday
- GB/T 27930 WG: **BJT 9:00-12:00** every Thursday
- 联合工作组会JWG (GB/T 18487.1 & 27930): 协调通信协议与充电系统关键技术
harmonize the communication protocol and charging sequence

征集意见 Circulation for comments

- 截至2022年8月，初步完成急停、剩余电流保护器、ChaoJi充电、V2G等1317条意见的讨论。
- As of august 2022, preliminary completed the discussion on 1317 comments including emergency shutdown, RCD, ChaoJi charging sequence, V2G, etc.



After 3 rounds of public consultation, a total of **1317** comments were received.

主要修改内容 Contents of GB/T 18487.1

Enhanced requirements and corrections for GB/T2015



- 明确标准范围及系统架构 Clarify the scope of the standard and the system structure
- 尽可能解决2015版存在安全问题 Solve the obvious safety issues of GB/T 18487.1-2015
- 参考最新IEC相关标准内容 Refer to the latest in IEC 61851-1:2017, IEC 61851-23 ed.2 FDIS...
- ChaoJi引入新功能及新应用 Introduce new functions & application scenarios into ChaoJi
- 适应未来升级需求 Adapting to future application needs



明确范围 Clarify the Scope

- applies to EVSE to provide energy transfer between for charging electric road vehicles and the supply network
- a rated supply voltage at side A up to 1 000 V AC or up to 1 500 V DC and a rated maximum voltage at side B up to 1 000 V AC or up to 1 500 V DC
- the requirements of EMC, top contact charging, IC-CPD, etc are defined in other standards.



新增术语 New Terms & Definitions

- bi-directional charging system/equipment, V2G
- case D/E connection, ACD, vehicle adaptor,...
- charging/bi-directional charging session, initialization, energy transfer, shutdown
- portable/mobile/fixed equipment
- rated current (A side), operating voltage range, rated continuous current, rated maximum voltage, rated maximum power,...

主要修改内容 Contents of GB/T 18487.1



分类 Classification- Improved DC output

DC EVSE is classified according to the output:

—Preferred voltage ranges of DC charging : 200V~500V, 200V~750V, 200V~950V*, and 500V~1500V.

—Preferred values of DC charging current: 10A, 20A, 30A, 50A, 80A, 100A, 125A, 160A, 200A, 250A, 315A, 400A, 500A, 630A, 800A. ← R20 series

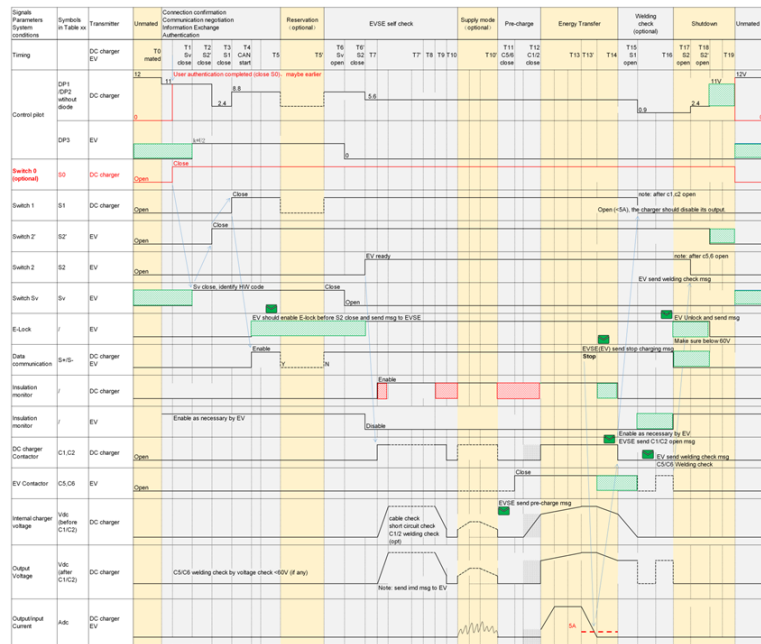


充电要求 Charging Mode 2/3/4- Supplement

- **Chapter 7:** Basic protection, Fault protection, Supplementary measures ← IEC 61851-23 FDIS
- **Chapter 8:**
 - *in locations with non-restricted access shall not charge an EV by connecting to one EV using multiple vehicle connectors.*
 - *Add Annex G the requirements for multiple DC outputs*
- **Chapter 9:** vehicle adaptor for Mode 4
- **Chapter 11:** Residual current device for AC/DC EVSE ← IEC 61851-1:2017
- **Chapter 14:** emergency stop switch is an optional function for all modes
- **Other requirement:** Load dump, minimum cross-sectional area of a protective conductor, inrush current, etc.
- **Update** Annex A according IEC 61851-1:2017 and Annex B DC charging based on GB/T 20234.3
- **Add** Annex F pulse heating before charging, Annex H Voltage adaption of EV to the voltage range of EVSE based on Annex B, Annex I V2G based on Annex D (ChaoJi)

新增内容 Contents of GB/T 18487.1

附录D和附录E ChaoJi系统和向前兼容 New Features for ChaoJi



01 安全性 Safety

- PE loss & human resistance detection
- I²t, Short circuit current, Y capacitor
- Over current, Over voltage
- IMD requirement
- Pre-charge process
- Error shutdown & Emergency shutdown...

02 兼容性 Compatibility

- Hardware coding in control pilot
- Backward compatibility with adaptor
- Forward compatibility : Ethernet, Power supply over CC2 ...

03 扩展性 Scalability

- V2G bi-directional charging
- Power supply mode (battery heating)
- Reservation charging ...

Thank you for your attention!

