ZE READY 1.2-b Requirement attributes

N°	Status	standard	Paragraph number	Paragraph title	Standard related	Z.E. READY 1.2-A	Charging mode	Topic	Requirement wording	Flexibility	Requirement type	Requirement check: test conditions	Requirement check: test means	Requirement check: acceptance criteria	To what does relate the requirement? P1 & P2: Electric installation	P3: EVSE: Charging station	P3: EVSE: Cord	P4: Véhicle	MENTION CANDIDAT
1	3	IEC 61851-1 ED 2.0			PN 61851-1	x			New version of IEC 61851-1 standard is compulsory	Mode 3: F0 Mode 2 F2	Standard application				x	x	x	x	
1-1	3	IEC 61851-1 ED 2.0			PN 61851-1	x	2 and 3	Safety	PWM power supply must be: +12 & -12V.	Mode 3: F0 Mode 2 <2013 F2 2013 F0	Standard precision	Unitary/ intégration	UNIT Bench/ INT Bench			x	x (mode 2)		
1-2	3	IEC 61851-1 ED 2.0	11.3.2	Proctection against electric shock	CEI 60364-5-53	x	3	Safety	In case of connector type IPXXB used by the charging station, if energizing function do not use a relevant equipment suitable for isolation according IEC 60364-5-53, (use of contactor, relay, thyristor,...) an additional isolation function based on remote control equipment suitable for isolation according IEC 60364-5-53 shall be necessary. Any undesirable voltage presence at the socket outlet will activate the isolation function		Standard precision	Unitary/ intégration	UNIT Bench/ INT Bench		x	x			
2-1	3	-			PN 61851-1	x	2 and 3	Normal operation	Charging station duty cycle will have to respect:: Mode 2 (<10%, ≥ 97%) Mode 3 (<3% or]7;10[or >97 %)	F0	standard precision	Unitaire	Supplier test (internal failure)			x	x (mode 2)		
2-2	3				PN 61851-1	x	3	Downgraded mode	In the case of a duty cycle out of range : - (<3% or]7;10[or >97≥ %) S2 on vehicle side will be opened, implying opening of contactor on charging station.	F0	standard precision	Unitaire	Véhicle Test					x	
3	3	-			PN 61851-1	x	2 and 3	Normal and downgraded mode	In case of S2 (véhicle side) opened, the contactors of the EVSE must be opened in a delay of 100 ms maximum, which will ensure the lack of power supply of the vehicle	F0	standard precision	Unitary/ intégration	UNIT Bench/ INT Bench			x	x (mode 2)		
4	3				PN 61851-1	x	2 and 3	downgraded mode	in case of short circuit between pilot line and gnd line, EVSE must detect the failure and switch off its contactor	F0	Standard precision	Unitary/ intégration	UNIT Bench/ INT Bench			x	x (mode 2)		
5	3					x	1, 2 and 3	Safety	In Mode TT and TN: The ground resistance of the installation must be lower than 150 Ohms.	F0 2012 F1:2011	Sup-plement X-Ready	Implementation	Process Audit	Approved fitter	x				
6	3					x	2 and 3	Safety	In Mode IT or TT> 150 Ohms: An isolating transformer with separate windings is placed upstream EVSE. This one must then be fed in mode TN	F0 2012 F1:2011	Sup-plement X-Ready	Implementation	Process Audit	Approved fitter	x				
7	3						1, 2 and 3	Safety	Mode IT is prohibitted	F0	Sup-plement X-Ready	Implementation	Process Audit	Approved fitter	x				

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8	3	Country Régulation			SC23H - question-nary	x	2 and 3	Electrical safety	The type of socket-outlet must be in conformity with the regulations in the country, in particular on the question of presence of the shutters. in case of socket outlet without shutters, locked closing door or equivalent could be also considered. In any case, supplier will have to justify the compliance with local regulation on that point. In case of attached cable , others measures will have to be taken to present equivalent protection (e.g wall box locked dock). This configuration is not recommanded as the first one	F0	Sup-plement X-Ready		Table check	Shutters or not	x	x	x		
9	3	Country Régulation			E.V READY in the country	x	3	Electrical safety	The choice of the type of connector on the domestic or private charging station will have to be aligned on the requirements of regulation. If this one remained ambiguous, the choice will have to be aligned on the orientation taken for the public charging stations in the country. In the case of an unspecified impossibility to meet this requirement, then the charging station could be provided systematically with an attached or detachable cord. In all the cases, the regulation will have to be respected. Note: A situation table for public charge in the countries will ahve to be drawn-up	F0	Sup-plement Z.E-Ready		Table check	Shutters or not	x	x			
11	3				IEC60364	x	Modes 1, 2: Single phase only Mode 3: Single or three pahses	Electrical safety	In single-phase current, in the case of charging station equipped with RCD Type A and if additional RCD is considered upstream, it shall be Type A or Type B. In three-phase current,in the case of charging station equipped with RCD, and additional RCD is considered upstream, it shall be of the same time.. If the local regulation allowed it, the head line RCD could be only type A in the condition which the charging station is equipped with a specific protection device against the DC current that could affect good functionality of this type A RCD. The RCD type A or B must compatible with the relevant immunity level in accordance with NF-EN 61543 2006 A2 Table 5a. In case of high disturbance network (industrial or similar) , it's recommanded to use a suitable high Immunity RCD (Classe 4 or equivalent) to avoid any trip caused by these disturbances	F0	Sup-plement E.V. Ready	Implementation	Process Audit	Approved fitter	x	x			
12	3					x	Modes 1, 2: Single phase only Mode 3: Single or three pahses	Electrical safety, Downgraded mode	In three-phase current, the véhcule must have a means of detection of the case of defect of insulation. In this case, if the protection of the installation were not activated, the vehicle will have to stop the load via the pilot line so that the EVSE opens its contactors. Maximum failure detection time: 100ms The detection device will also insure that level of DC leakage Current will not affect good functionality of posible type A RCD upstream. Nevertheless, installation will still have to respect the requirements N° 10 & 11.	F0	Sup-plement X-Ready	Integration tests	Bench	EVSE Contactors opened on case of DC failure				x	
13	3					x	3	Electrical safety	IP 21 Level for interior charging devices	F0	Sup-plement E.V. Ready	IP Test	IP Bench Test	No water in the device		x			
14	3					x	3	Electrical safety	AT least IP 44 Level for exterior charging devices	F0	Sup-plement E.V. Ready	IP Test	IP Bench Test	No water in the device		x			

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15	3					x	3	Performance	The gauge at the outlet point (s) of the charging station will have to respect following segmentation: - 16 Amp. Single or three phases - 32 Amp. Single or three phases - 63 Amp. Three phases The 13 Amp is covered by 16 Amp charging station Some countries should limit this segmentation by regulation.	F1	Sup-plement X-Ready	Unitary test	Multimeter/oscil-loscope		x	x			
16	3					x	3	Performance	The gauge of the cords will have to respect the following segmentation: - 13 Amp Single or three phases - 20 Amp. Single or three phases - 32 Amp. Single or three phases* - 63 Amp. Three phases	F1	Sup-plement X-Ready	Unitary test	Thermal increase measurement				x		
17	3					x	3	Performance Availability	Whatever the conditions of use (temperature,…). The design of the distribution of the installation will have to allow the supply of the power corresponding to the gauge of the charging station The charging station could be protected with a circuit-breaker: 20A curve D for a charging station of 16A 40A curve D for a charging station of 32A 80A curve D for a charging station of 63A If other choice would be made, The évidence of availability (derating by duty cycle is allowed) in worst case thermal conditions will have to be provided.	F1	Sup-plement X-Ready		Visual inspection		x				
18-1	3				PN 61851-1	x	2 and 3	Performance	Precision on the maximum supply current consumed by the vehicle: = I Max* + 0 mA; -0.5 A (* valid on the full range authorized for the PWM)	F0	Sup-plement X-Ready	Unitary test	Oscil-loscope and multimeter					x	
18-2	3				PN 61851-1	x	2 and 3	Performance	Precision on the gauge of PWM on pilot line: Duty cycles max = rmax standard + 1% -1% Duty Cycles Min = standard min + 1% -1%	F0	Sup-plement X-Ready	Unitary test	Oscil-loscope and multimeter			x	x (mode 2)		
18-3	3					x	2 and 3	Availability	In any case, in normal conditions, taking into account all the possible unaccuracy of itself and of the véhicle according to ZE Ready requirements, PWM duty cycle will not exceed a value that could be inconsistent with: - the maximum current allowed by the circuit breaker (Requirement N° 17) - The maximum current allowed by itself according to requirement N° 28.	F0	Sup-plement X-Ready	Unitary/integration test	TBD			x	x (mode 2)		
20	3					x	3	Performance	The charging station must consider the minimum value of available energy from the installation and harness ratings to fix its PWM relevant value	F0	Sup-plement X-Ready	unitary and integration tests	Oscil-loscope and multimeter			x	x (mode 2)		
21	3					x unless home charging	3	Locking	The charging station must lock the plug when introduced.and connected on car side (state B), unless if it is a home charging or private parking device that do not need locking function.	F1	Sup-plement X-Ready	unitary and integration tests	Visual inspecton			x			

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22	3					X unless home charging	3	Locking	The charging station should never unlock the cable when connected to the vehicle (State B unless following conditions, State (C& D). The charging station should unlock in the following conditions: - when its state is A (12V) or - when its state is A + relevant customer action (RFID,...) or - when its state is B + relevant customer action (RFID,..) In state E or F, socket-outlet should be unlocked.	F1	Sup-plement X-Ready	unitary and integration tests	Visual inspecton			X			
23	3					X	3	Electrical Safety	In case of charging station contactor failure or any other reason conducting to voltage>50 Volts at the socket outlet (PN, PP , PE or NE), charging station will have to ensure failure detection and will have to inform user through its HMI that device is out of service. In case non-shutterred connector on the device or in case of charging station power gauge higher than 4 KW, charging station will have to activate additional protection to switch off the line and to stop any supply on the outlet.	F1	Sup-plement ZE-Ready	Unitary	UNIT Bench			X			
24	3						3	Electrical Safety	In case of charging station contactor failure : At least 1 contact can't be opened, charging station will have to ensure failure detection and will have to inform user through its HMI that device is out of service. Charging station will have to activate additional protection to switch off the line and to stop any supply on the outlet.	F0	Sup-plement EV-Ready	Unitary	UNIT Bench			X			
25	3						3	Electrical Safety	In case of several charging stations connected to the same power supply line, an addtional local ground connection will have to be ensure in order at least , every 10 outlets. The maximum resistance for each additional ground connection (taken independently) will have to be < 167 ohms. All the ground lines will have to be connected to ensure a single equi - potential	F0	Sup-plement EV-Ready	Implementat ion	Process Audit	GND Measureme nt	X			
26-1	3	Spécifié ZE Ready			IEC61009-1	X	1,2,3	Downdegraded mode	Only a manuel operation is allowed to reset an RCD or thermal circuit breaker. Automatic Reset is prohibited. Automatic shutdown is accepted	F0 2011			Visual inspecton		X	X			
26-2	3	Spécifié EV Ready			IEC61009-1		1,2,3	Downdegraded mode	Only a manuel operation is allowed to reset an RCD or thermal circuit breaker. Remote operation should be allowed according to relevant standards or regulations.	F0 2011			Visual inspecton		X	X			
28	3	IEC 61851-1 version 2010	Annex B	B4: System for detection....	IEC 61851-1 version 2010	X	3	Electrical safety	The harness shall have its connectors equipped with resistor current rating on each side. The charging station shall read resistor rating value of the harness and fix the maximum current allowed consequently (PWM signal). The charging station shall stop the charge and open its contactors in case of overload detected Overload will be considered for: * I/I_{pwm} >105% during T>1000s * I/I_{pwm}>110% during T>100s * I/I_{pwm}>120% during T>10s	F0	Sup-plement X-Ready					X	X		

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															P1 & P2	P3: EVSE		P4	
N°	Status	standard	Paragraph number	Paragraph title	Standard related	Z.E. READY 1.2-A	Charging mode	Topic	Requirement wording	Flexibility	Requirement type	test conditions	test means	acceptance criteria	Electric installation	Charging station	Cord	Véhicle	
29	3	IEC 61851-1 version 2010	Annex B	B4: System for detection….	IEC 61851-1 version 2010	X	3	Downgraded mode	Case of PWM incoherent value : Vehicle shall compare PWM signal with maximum current rating read on the harness. In case of incoherence, S2 will be opened involving main contactor opening at the charging station	F2 2012	Sup-plement X-Ready							X	
30	3					X	3	EMC	Any close mobile phone shall not be able to disturb charging process	F0	Sup-plement X-Ready					X			
31	3	IEC 61851-1 version 2010			IEC 61851-1 version 2010	X	3	Safety	In case of use of simplified control pilot interface: - Car shall not consume more than 10 amps - Charging station will not deliver more than 10 amps an will fixed its PWM signal consequently	F2 up to 16 amps 1 phase	Sup-plement X-Ready					X		X	
32	3	Installation power capacity: Charge availability				X	Mode 3	Service/ performance	**Installation process requirement:** Installation shall be able to supply EV with power level selected by customer when he bought the charging station (3,5Kw, 7kw, 11Kw, 22kw). Charging power shall not be derate power without customer consent……**F0** This performance shall be obtained: - Either, by a suitable subscription to the energy provider - Either by implementation of power management system on electric installation that will give priority to EV by default - Or both	F0	Sup ZE Ready				X				
33	3	Home charging management: Charge availability				X	Mode 3	Service/ performance	**Private individual case:** Charging station must be able to supply EV with the with maximum range initialy selected. Charging station shall not derate power without customer consent……**F0** However, Advanced energy/load management implementation in the installation can be added as option……F3 In that case and only in that case, - Off peak hour postponement remains possible, but only on customer clear stated intention and under conditions that supply remains available in any case after charge starting (ex: Peak hour .return……**F0** - Current modulation remains possible under conditions below: ……F0 ▪ Use of appropriated manual selector that will advise customer on corresponding nominal charge duration ▪ Power supply selector will never get under 2, 3 KW	F0 , F3 (See text)	Sup ZE Ready				X	X			
33-1	3	Home charging management: Charge availability (following)				X	Mode 3	Service/ performance	Scheduling F3: Every thing is allowed in conditions that we use PWM signal (high frequency stop and go prohibited = not more than 3 times per charge) and guaranty of full charge remains under customer control……..F0	F0 , F3 (See text)	Sup ZE Ready				X	X			

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35	3	IEC 61851-1 version 2010		Table A7	IEC 61851-1 version 2010	x	Mode 3	Service/ performance	Charge interrupt: When vehicle come back from state C to state B, PWM signal must remain active, unless if charging station would not be capable of supplying energy. In that case, it will have to go to state E or F(0 or -12 volts on pilot line) depending of the root cause of this situation	F0	Standard precision					x			
36	3	IEC 61851-1 version 2010		Table A7: t1a	IEC 61851-1 version 2010	x	Mode 3	Service/ performance	* In case of automatic charge with immediate launching (e.g no button to push or equivalent..), t1a shall be reduced to 5 seconds maximum. * In case of automatic charge with postponed launching (e.g of peak hours selected) , t1a will be reduced ato 5 seconds maximum, the PWM will be maintained at least 30 seconds and will be stopped waiting for the end of the postponed period to start again. (PWM +12 volts) * In case of charging authorisation needed (e.g for public charging), t1 a will be conditionned by the time until customer action (e.g button pushed or RFID recongnized..). After such a authorization received, Maximum time to set up PWM will be 5 seconds	F0	Standard precision					x			
37	3	IEC 61851-1 version 2010			IEC 61851-1 version 2010	x	Mode 1, 2	Electrical safety	Mode 1 and 2 are prohibited in 3 phases and over 10 amps in single phase with household sockets . This maximum value could be reduced according to national standards or regulations or advises. Extension cords and adaptors are prohibitted in any mode.	F0	Sup X Ready				x		x		
38	3					x	Mode 3	Electrical safety	In case of current measurement used to insure safety overload protection,inside the charging station. Self test of current monitoring function will have to be performed with an internal calibrated current reference.	F2 2011 F0 2012	Sup X Ready					x			
45	3	IEC62305-4			IEC62305-4	x	1,2,3	Robustness	**Outdoor Public station:** To consider an additional earth connection or local bonding. Features (mm², Resistor will have to be fixed according national rules, standards or regulation. e.g: UK= BS7671, Fr: NFC 17-200,…). For Surge Protector Device, It may be considered according to national rules. The SPD, if decided, could be located in the station or elsewhere depending of the distribution configuration. **Home station:** Surge Protector Device: It may be considered according to national rules (same for the choice of the class). The SPD, if decided, could be located in the charging point or in the distribution system.	F0	Standard application	Implementation	Process Audit		x AND/OR	x	x OR		
46	3	IEC 62196-2			IEC 62196-2 version 23H_235_CD	x	3	Robustness	Application IEC 62196-2 version 23H_235_CD	F0	Standard application	Unitary test	Electric check, Visual inspection			x	x		
47	3					x	3	Safety	EMC emission limitation for RCD integrity: Level 3 / 61000-9 Failure detection and switch Off	F0: Veh F0: Station F1 Veh F2 Station	Supplement X-Ready	Unitary test			x OR	x			

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48	3					x	3	CEM	System Requirement µv / Fr 100 / 9 94 / 18 88 / 36 82 / 72 76 / 144	F2 2012	Supplement X-Ready	Integration test				x		x	
49	3					x	3	Diversity, interoperability	In mode 3, for charging station of power > 3, 5KW (16 amp eand more) socket outlet will be only type 2 or 3-C . For charging station of power < 3,5KW (<16 amp) socket outlet will be only type 2 , type 3-C or Type 3-A. On the car side, Only Type 1 and Type 2 are allowed. Attached cable is also accepted (see conditions in R N°8)	F0	Supplement X-Ready	Integration test				x	x	x	
50	3					x	3	Safety	in simplified mode 3, ground loop through pilot line will have to go through the véhicle including all metallic parts connected. Local loop in the cable is strictly prohibitted	F0	Supplement X-Ready	Integration test				x	And/ x	x	
51	3					x	1,2,3	Safety	Installation ground link: In case of TN mode, installation must be checked to évaluate upstream Neutral cut-off failure. The ground configuration will have to respect following conditions: - Multple ground network interconnection in order to insure that in case of failure described below, ground remains connected to the transfromer neutral. (via neighbour link). - if below conditions cannot be insured, a local ground connection will have to be created. In case of failure, ground configuration woul be TT. Equivalent ground resistor wil have to be less than 167 Ohms. 1,5Kohms	F0 F1 F0	Supplement X-Ready	Integration test			x				
52	3					x	2,3	Safety	Timing related to safety GND failure detected by the charging station: For any safety failure like ground anomaly (short circuit betwwen Pilot and Gnd Lines, open circuit of gnd line or pilot line,….), the charging station shall detect the failure and will open supply line in a period of 200ms maximum: Time between event apparition and circuit breaking (loss of voltage at the ouput of the station)	F0	Supplement X-Ready	Integration test				x	x (mode 2)		
A1	3	IEC 61851-1 ED 2.0				x	2 and 3		In case of supply outage during the charge, the station will have to restart automaticly the process when current will be back on. No manual operation must be necessary	F1		Unitary/ intégration	UNIT Bench/ INT Bench		x	x			

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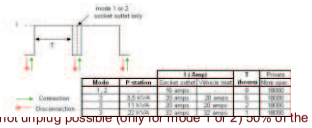
A2	3	IEC 61851-1 ED 2.0			PN 61851-1	x	2 and 3		In case of charging process stop will on the station side for any reason, the following timing will have to be considered: - A) On station side, the PWM reference will have to be fixed on 'not allowed range' (x>97%, 10<x<7) , and then sation will wait for car feedback . If after 5 second , there is no feedback from the car, the contactor will be opened - B) On car side, the S2 will heve to be opened accaording to 851-1 requirements (3 sec max) - C) The station will have to opened the contactor according to 851-1 requirements (100ms Max) After S2 opening	F1		Unitary/ intégration	UNIT Bench/ INT Bench			x			
A3-1	1					x (domestic)	1,2 and 3	Life time	**Socket outlet life time:** Whatever the mode used, the socket outlet or vehicle inlet shall support a number of connections an disconnections combined with current cycle corresponding to the charging profile with a temperature rise that will have to stay less than 50 °C.  In case of hot unplug possible (only for mode 1 or 2) 50% of the disconnections will be done under nominal current.	F0	Supplement X-Ready	Unitary/ component testing Nbr of samples: **25**	Specific Bench		x	x			
A3-2	1					x (private)	1,2 and 3	Life time	**Socket outlet life time:** Whatever the mode used, the socket outlet or véhicle inlet shall support a number of connections an disconnections combined with current cycle corresponding to the charging profile with a temperature rise that will have to stay less than 50 °C.  In case of hot unplug possible (only for mode 1 or 2) 50% of the disconnections will be done under nominal current.	F0	Supplement X-Ready	Unitary/ component testing Nbr of samples: **25**	Specific Bench		x	x			
A4	1					x	3	Performance Error offseting	In case of current level limit sent to the car (PWM) not actually reached , the station shall increase the level of the PWM provided that: - The real current will stay in the limits of the 93% of the MCB rating and in the limits of connected cable rating. - the current reference increase shall stop as soon as the real charging current will stop to increase. (closed loop stall)	F0	Supplement X-Ready	Unitary / intégration	UNIT Bench/ INT Bench			x			
A5	1					x	3	Durability	In fast charge AC 43 KVA, connector contact shall be sylver coated Power wiring section shall be at least 16 mm² per conductor Maximum mechanical guidance will be searched in order to reach a+- 1,5 degree of misalignement when the connection begins to be set up (first contact)	F0	Sup-plement X-Ready	Unitary / intégration	UNIT Bench/ INT Bench			x			x	

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A6	1					x	3	Robustness	**Current sensor accuracy** The trigger set up for overcurrent detection will have to take into account following features: - Accuracy of the current sensor - error on the transmitted PWM data related to emission (station side). This point shall guarantee to maintain the trip level specified in Req # 28, whatever the dispersion of the current sensor (s) of the station	F0	Sup-plement X-Ready	Unitary / intégration	UNIT Bench/ INT Bench			x			
A7	3	Spécifié ZE Ready				x	3	Interoperability	After a starting sequence, if the car do not close its S2 within 30 seconds after the B2 state, the station will simulate a disconnection of cable on station side during 3 seconds and will restart the charging sequence with a B1 duration lower than one second, in order to wake up the possible car asleep. This will be applied only one time.	F0	Sup-plement X-Ready	Unitary / intégration	UNIT Bench/ INT Bench			x			
A8	1	Spécifié ZE Ready				x	3	Zoé compatibility	Single phase PMW reference Floor: 12% (+/- 1%) Three phases PMW reference Floor: 22% (+/- 1%) The station shall maintain its PWM reference above floor value. However, one excursion below the floor value can be accepted during the charge providing that excursion time wil never exceed 14 minutes.	F0	Sup-plement X-Ready	Unitary / intégration	UNIT Bench/ INT Bench			x			
A9	1	Spécifié ZE Ready				x	3	Zoé compatibility	Three phases cable of 13 amps are not allowed.	F0	Sup-plement X-Ready	Unitary / intégration	UNIT Bench/ INT Bench				x		
A10	1	Spécifié ZE Ready				x	3	Zoé compatibility	Overcurrent protection: The overcurrent protection specified on requirement ZE READY N° 28 wil be desctivated in case of PWM Refrence under the floor defined in Requirement N° A8	F0	Sup-plement X-Ready	Unitary / intégration	UNIT Bench/ INT Bench				x		
A11	1	Spécifié ZE Ready				x	3	Zoé compatibility	Voltage between neutral and protective earth conductors of the installation will not exceed 10V rms maximum. *La tension entre le Neutre et le PE de l'installation ne devra pas exceder 10 voltsefficace maximum.*	F0	Sup-plement X-Ready	Unitary / intégration	UNIT Bench/ INT Bench		x				
A12	1	Spécifié ZE Ready				x	3	Zoé compatibility	Harmonic distortion and unbalancing on the public supply system: The public power supply system will be absolutely compliant with standards IEC 61000-2-1, 61000-2-2 and EN 50160 § 4.2.4 and § 4.2.5 Otherwise, the installation will be adapted to finally respect the standards (additional filter, different electrical connection etc...) *Distorsion harmonique et désequilibre sur le réseau de distribution électrique:* *Le réseau électique devra imperativement être conforme aux normes CEI 61000-2-1 et 61000-2-2 et EN 50160 § 4.2.4 et § 4.2.5* *Dans le cas contraire, l'installation devra être adaptée pour revenir à la norme (rajout de filtre, raccordement different etc)*	F0	Sup-plement X-Ready	Unitary / intégration	UNIT Bench/ INT Bench		x				

ZE READY 1.2-b Requirement attributes												Requirement check			To what does relate the requirement?				MENTION CANDIDAT
															P1 & P2	P3: EVSE		P4	
N°	Status	standard	Paragraph number	Paragraph title	Standard related	Z.E. READY 1.2-A	Charging mode	Topic	Requirement wording	Flexibility	Requirement type	test conditions	test means	acceptance criteria	Electric installation	Charging station	Cord	Véhicle	
A13	1	Spécifié ZE Ready				x	3	ZE compatibility	Low-frequency conducted disturbances in public power supply system, from 0 to 150 kHz (excluding harmonics): The noise level in the frequency band 0-150kHz (excluding harmonics) will no exceed 4% of the phase to neutral voltage Otherwise, the installation will be adapted to finally respect the standards (additional filter, different electrical connection etc...) *Perturbations conduites basse frequance sur le réseau de 0 à 150 kHz hors harmoniques:* *Le niveau de bruit dans la bande de frequence 0 à 150 kHz (hors harmoniques) ne devra depasser 4% de la tension phase-neutre .* *Dans le cas contraire, l'installation devra être adaptée pour revenir à un niveau acceptable (rajout de filtre, raccordement different etc)*	F0	Sup-plement X-Ready	Unitary / intégration	UNIT Bench/ INT Bench		x				
A14	1	Spécifié ZE Ready				x	3	ZE compatibility	Recommandations for installation process: - AC 22 KVA and 43 KVA (3 phases) - AC 3,5 KVA and 7 KVA (Single phase) See appendix documents FI A14 -1B and FI A14-2B lien hypertexte	F0	Sup-plement X-Ready	Installation			x				

STATUS		
	1	DRAFT
	2	CHECKED
	3	APPROUVED

Flexibility		
	F0	Compulsary
	F1	Highly recommended , however alternative proposal can be accepted
	F2	Recommended, however derogation can be accepted
	F3	Possible option

X-Ready Fi A14-1B

Accelerated and Fast AC charging-stations installation recommandations

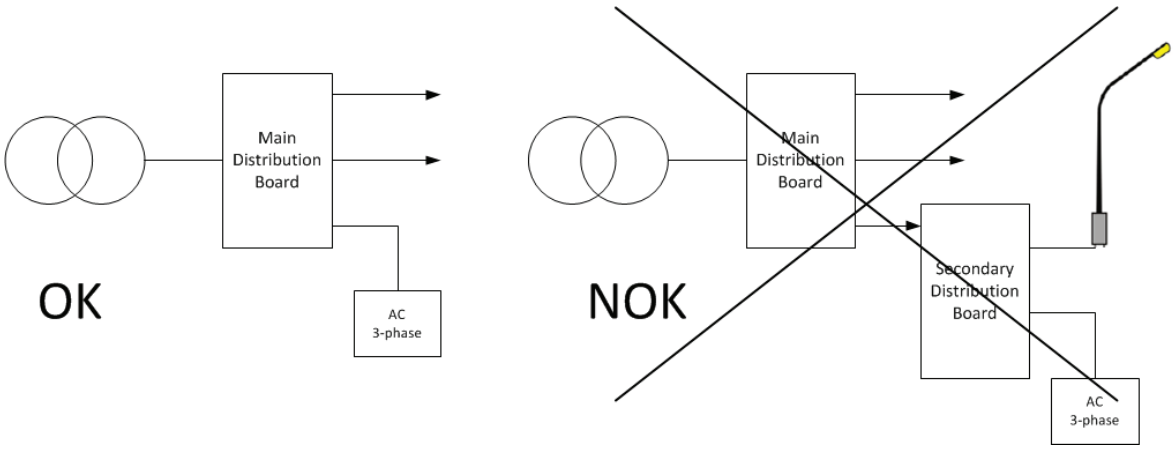
Fast AC ➔ three-phase 16, 32 or 63A

1. Earthing system

IT mode is forbidden and in some countries, in TN, only TN-S is allowed.

2. Choice of distribution board

Charging station shall be connected to the closest point of the transformer and the farthest of known polluting equipment (inverters, public lighting, …)



2. Grounding check

If in TT, Earthing shall be below 50 Ohms or less if recommended by national regulation. If NOK : an earthing rod shall be implemented the closest to the charging station.

In TN, no checks are required

3. Test with vehicle

The installer shall check the installation with a test car. The charge shall be OK during 10minutes at least.

4. If the test is not possible or is NOK,

➔ a **transformer** in TN mode shall be implemented (coupling Dyn11 is adequate) with a new earthing rod and separated from the old grounding wire.

X-Ready Fi A14-2B

Normal or slow AC charging-stations installation recommandations

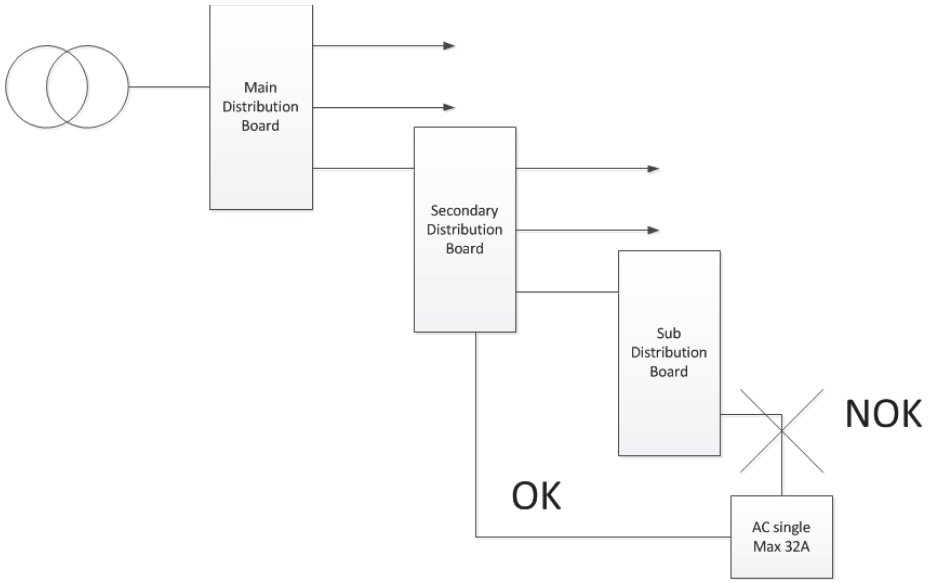
Normal AC ➔ single-phase 16 and 32A

1. Earthing system

IT mode is forbidden and in some countries, in TN, only TN-S is allowed.

2. Choice of distribution board

Charging station shall be implemented before the third distribution board and the farthest of known polluting equipment (solar inverters, UPS, …)



1. Grounding check

In TT, Earthing shall be below 150 Ohms or the recommended national limitation,

Please consider also to implement a new earthing rod if possible.

2. If MainsLeakage issue

In TT, a new local ground connection separated from the existing one shall be implemented.

In all other cases (or if grounding improvement is not sufficient), a transformer in TN mode shall be implemented (single-phase transformer) with a new earthing rod and separated from the old grounding wire.