	FACTORY ACCEPTANCE TEST CHECKLIST FOR VISUAL INSPECTION OF LOW VOLTAGE ELECTRICAL BOARDS	CKE.ITP.01.35.(00).2012			
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PROJECT NAME :	
MANUFACTURER NAME :	

Notes:

- This form is to be used as a checklist for visual inspection acceptance only. Other acceptance criteria such as dielectric properties test, insulation resistance test and functional test shall use the forms provided by the manufacturer. S.O Rep is advised to begin the FAT with the visual inspection test ahead.
- Prior departure to the factory, SO Representatives (SORs) are recommended to bring together:
 - Documents : Approved Shop Drawing of Switchboard, BQ & Material List as per contract
 - Tools : Digital Caliper, Measuring Tape, Torchlight, Digital Camera
- Upon arrival and prior of any testing, SO Representatives are required to check/ensure:
 - Date of calibration status of the instruments to be used for testing. (Calibration validity: 2 years)
 - Certificate of the manufacturer's competent person who will in charge for the testing. (Min. AO)
 - Brand & Model of the material installed had been approved during construction stage as referred to material approval list (comply to J-MAL and material list as per contract).
 - Inspect thoroughly compliance of the manufactured switchboard with the approved shop drawing particularly on the following criteria:
 - Rating, Number of Poles & Arrangement of **EACH** Switchgear and terminals

NO.	DESCRIPTION	SPECIFICATION/JKR REQUIREMENT	COMPLIANCE [V: Yes, X: No, -: Not Applicable]	REMARKS
A) Self-Contained <u>Floor Mounted</u> Cubicle Switchboard		Board Name:		Also applicable to PFC Board and GSC Board
1	Form of Separation	Form 2B		Minimum Requirement.
2	Frame Thickness	Switchboard ≥ 2.5 mm		
3	Panels, Covers & Doors Thickness	≥ 2.0 mm		
4	Panel (Top & Sides)	Removable		
5	Panels, Covers & Front Doors	Cylindrical knurled head (chromed type) c/w retaining clip		
6	Serrated Star Washer	At front cover		
7	Material for Frame	Rolled Steel		
8	Anti Rust Treatment	Epoxy dry powder		
9	Color	Enamel Grey (Exterior) Matt White (Interior)		
10	Base Cover Plates	Provided		
11	Door	Espagnolette/cremone bolt, locking device & satin chrome lever handle at the center fixing		
12	Rear Door	Hinged removable & double-leaf type		
	12.1 Width of Each Leaf	≤ 450 mm		
13	Louvers with filter	Sides & back		
14	Withdrawable switchgear	Own compartment with rear connected busbars		
15	Height of indicating instrument	≤ 2000 mm (above the base)		
16	Building automation devices, transducers, relays	Separately housed in a compartment		
17	SPD	Separate compartment at immediate lower subsection & totally compartmentalize		
18	Tool Compartment	Located at the lowest subsection c/w lockable with key		
19	All secondary wiring	Neat Properly labelled with number sleeves		



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B) Wall Mounted Switchboard								
1	Material	Sheet steel						
2	Thickness	≥ 2.0 mm						
3	Portion of the Front Cover (cut-out & meter)	Fibre type						
	3.1 Thickness	≥ 5.0 mm						
4	Louvers with filter	Both sides						
5	Serrated Star Washer	At front cover						
6	Anti Rust Treatment	Epoxy dry powder						
7	Color	Enamel Grey						
8	Panels, Covers & Front Doors	Cylindrical knurled head (chromed type) c/w retaining clip						
9	All secondary wiring	Properly labelled with number sleeves						
C) Busbars								
1	Mounting	Non-hygroscopic insulator						
2	Busbar	Tinned hard drawn high conductivity copper						
3	Horizontal Busbar & Vertical Busbar Size (at main incoming supply) Size	Drawing requirement:		Compliance:			Horizontal & Vertical Busbar Size (at main incoming supply) should be the same. Size as installed is similar or more than as in the approved shop drawing.	
		R						
		Y						
		B						
4	Distrubution Busbar Size similar as approved shop drawing (Vertical at each outgoing)	Drawing requirement:		Compliance:			Size at each Distribution Busbar shall be less than or equal to the maximum size of outgoing circuit breakers connected to it.	
		R						
		Y						
		B						
5	Multiple Parallel Busbars	Separated by tinned copper spacers (at spacing equal to the busbar thickness)					Spacing=busbar thickness	
		R-Y-B-N (from back to front)					Front _____ Back R - Y - B - N	
7	Phase Indication/ Identification	Painted with colour at appropriate points to denote the phase						
8	Switchboard Earthing Bar	Tinned copper						
	8.1 Size	50 mm x 6 mm Or else otherwise specified						
9	Earthing Bar Identification	Painted with green at appropriate points						
D) Conductors								
1	Sizes	As per approved drawing						
2	Cabling	Neat and tighten						
3	Coloured Cable	For ≤ 25mm ² cable: shall be colour coded to identify the phase &neutral conductors						
4	Cable End Termination	Coloured cable sleeve to identify the phase and neutral conductors						
E) Others								
1	Indicating Lamps	Easily be replaced from the front of the panel. LED type						
2	Anti Condensation Heater	Installed for every 2 sections, excluding busbar compartment. Heater c/w enclosure						
	2.1 Heater	c/w automatic thermostat control, ON-OFF switch & indicating lamp.						
3	Labels	Engraved with white lettering,black background & fastened or riveted						

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F) Switchgears							
1	Switchgears	Current rating are accordance with drawing and/or BQ					
2	ACBs	Withdrawable metal clad, flush mounted & horizontal drawout isolation, c/w shutter					
	2.1 No. of poles	3 or 4					
	2.2 Icw	Minimum 50 kA at 415V for 1 sec. or otherwise specified					
	2.3 Copper tape/bar from frame (metal) of ACB to SEB	Tinned copper					
	2.4 Used as Bus-coupler	4 pole					
3	MCCBs	No. of poles are accordance with drawing and/or BQ					
	3.1 Icu	Minimum 50 kA at 415V for 1 sec. or otherwise specified					
	3.2 Incoming Feeder Circuit Breaker ≥ 400A	Provided with panel mounting external operating handle with padlocking facilities and door interlocking facilities					If required
G) Current Transformers							
1	Secondary Rating	5 A					
2	Rating	≥ 15 VA					
3	Accuracy (for measuring & metering)	Class 1.0 or otherwise specified					
4	Accuracy (for protection)	Class 10P10 or otherwise specified					
H) Surge Protection Device							
1	Connecting Leads	as short as possible					Preferably not exceeding 0.5m for the total length.
2	2.1 Isolation of SPD : MCCB / Fuse	4 pole MCCB or fuses or otherwise specified					
	2.2 Isolation of SPD : Compartment	Separate compartment for SPD					
3	Transparent Window for viewing the SPD indicator	At front cover of the SPD's compartment for viewing the SPD indicator					
4	Label “Amaran” at SPD compartment	Sentences as in L-S1 with red lettering on a white background					
I) Distribution Board							
1	Material	Sheet steel					
2	Thickness	1.2mm to 1.5 mm					
3	Serrated Star Washer	At front cover					
4	Anti Rust Treatment	Epoxy dry powder					
5	Color	Enamel Grey					
6	Panels, Covers & Front Doors	Cylindrical knurled head (chromed type) c/w retaining clip					
7	Comb / Fork Busbar	Insulated type					

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Note : For item J, K & L, the compliance of specification & JKR requirement for item Self-Contained Floor Mounted Cubicle Switchboard and item Busbar are similar as LV Switchboard above. i.e: Thickness, size, material, etc.				
J) Power Factor Correction Board (PFCB)				
1	Enclosure	Not form part of the switchboard it is connected to (independent) but match the height and depth.		
	1.1 Icu of MCCB / ACB	Minimum 50 kA at 415V for 1 sec. or otherwise specified	Icu:	
	1.2 Access	Front & rear	Ics:	
2	Capacitor			
	2.1 Category	C (min. 40°C)		
	2.2 Rated Voltage	525V, 50Hz		
	2.3 Housing/Container	Heavy metal sheet steel		
	2.4 Separation between capacitors	Min. 80mm		
3	Reactor	Installed in separate compartment of PFCB c/w rubber pad to reduce noise due to vibration etc.		
	3.1 Class	H		
	3.2 kVAR Rating (Reactance)	Min. 6%		
	3.3 Rated Voltage	440V		
4	MCCB			
	4.1 Icu of MCCB / ACB	Minimum 50 kA at 415V for 1 sec. or otherwise specified. Ics = 100% Icu	Icu: Ics:	
	4.2 Minimum Continuous Current Ratings	Min. 155% of rated capacitor currents		
5	Switching Contactor			
	5.1 Utilization Category	AC-6B		
	5.2 Minimum Continuous Current Rating	Min. 135% of rated capacitors currents		
	5.3 Ventilation Van	Heavy duty type* c/w filter and automatic shutter		*Air Exchange : Min.200 cubic meter perhour
6	All secondary wiring	Properly labelled with number sleeves		
K) Generator Set Switchboard [Essential Board]				
1	Enclosure	Not form part of the switchboard it is connected to (independent) but match the height and depth.		
2	Automatic Transfer Switching Equipment (ATSE)	Transparent protection screen of full compartment size shall be provided in front of automatic changeover contactors / ATSE		
	2.1 Contactor Utilization Category	AC-33B		
	2.2 MCCB / ACB type	4 pole		
3	Tinned Copper Earthing Bar	25mm x 6mm		
4	All secondary wiring	Properly labelled with number sleeves		
L) Generator Set Control Board (GSCB) [AMF Board]				
1	Enclosure	Not form part of the switchboard it is connected to (independent) but match the height and depth.		
2	Emergency Stop Push-Button	Provided and c/w self-latching mushroom head type		
3	Alarm Bell	Min.250mm diameter		
4	All secondary wiring	Properly labelled with number sleeves		

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COMMENTS (IF ANY)

CHECKED BY [S.O. Representative]

Signature :		Position :	
Name :		Date :	
(CAPITALS)			
On behalf of :			

WITNESSED BY [JKR] **if applicable*

Signature :		Position :	
Name :		Date :	
(CAPITALS)			
On behalf of :			

ELECTRICAL CONTRACTOR

Signature :		Position :	
Name :		Date :	
(CAPITALS)			
On behalf of :			

MANUFACTURER

Signature :		Position :	
Name :		Date :	
(CAPITALS)			
On behalf of :			