Telecommunication Equipment Cabinets

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Chief Technical Officer

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1 SCOPE

The scope of this specification is limited to the standard telecommunication equipment cabinets that Broadband Infraco (Pty) Ltd (Broadband Infraco) will make use of in its own network equipment rooms or hosting containers. Whenever it is necessary for Broadband Infraco to install equipment cabinets in data-centre hosting environment, the specification for equipment cabinets will be obtained from the room owner directly,

2 OBJECTIVES

This specification details the technical requirements of Broadband Infraco for the design, manufacture, supply and installation of standard 42U telecommunication floor standing equipment cabinets and small 9U high wall mounted cabinet. The equipment cabinets are for use in Broadband Infraco's network equipment rooms for the mounting of miscellaneous 19" rack-mountable equipment.

This specification comprises technical requirements for equipment cabinets in the following areas:

General requirements	Gland plates/cable entries	DC Power Distribution
Dimensions	Splitting of cabinets	AC Power Distribution
Base Plate/ mounting mechanism	Doors	Preparation of Surface
	Earth	Installation and delivery

In addition, the specification also outlines requirements related to options, compliance to international standards, packaging, drawings and quality assurance.

3 REFERENCE DOCUMENTATION

The following documents contain provisions that, through reference in the text, constitute requirements of this specification. At the time of publication, the edition indicated was valid. All controlled documents are subject to revision, and parties to agreements based on this specification are encouraged to investigate the possibility of applying the most recent edition of the documents listed below:

Doc No	Description
ETS 300 119-1	Introduction and Terminology
ETS 300 119-2	Engineering Requirements for Racks and Cabinets
ETS 300 119-3	Engineering Requirements for Miscellaneous Racks and Cabinets
ETS 300 119-4	Engineering Requirements for Sub-racks in Miscellaneous Racks and Cabinets
SANS 1091 – 2004	Specification for National Colour Standards for Paint
IEC 60297	Dimensions of Panels and Racks
SANS 1274:2005	Coatings applied by the powder-coating process
IEC 60947-2	Low-voltage switchgear and control gear –Part 2 : Circuit breakers
SABS 164-4	Plug and socket-outlet systems for household and similar purposes for use in South Africa – Part 4: Dedicated system, 16 A. 250 V AC
IEC 60320	Appliance couplers for household and similar general purposes
SANS 60529/IEC 60529	Degrees of protection provided by enclosures (IP Code)

Table 1: List of Applicable Standards

4 DEFINITIONS, ABBREVIATIONS AND ACRONYMS

4.1 DEFINITIONS

- certificate of compliance" means a certificate with a unique number obtainable from the chief inspector, or a person appointed by the chief inspector and issued by a registered person in respect of an electrical installation or part of an electrical installation.
- "electrical contractor" means a person who undertakes to perform electrical installation work on behalf of any other person.
- "electrical installation" means any machinery, in or on any premises, used for the transmission of electricity from a point of control to a point of consumption anywhere on the premises.
- "Electrical Installation Regulations, 1992" means the Electrical Installation Regulations, 1992, promulgated by Government Notice No. R. 2920 of 23 October 1992.

4.2 ACRONYMS AND ABBREVIATIONS

Acronym	Description
A	Ampere
AC	Alternating Current
e.g.	exempli gratiā, meaning “for example”
ETS	European Telecommunication Standard
IEC	International Electro-technical Commission
ISO	International Organisation of Standards
mm	millimetre
PDF	Portable Document Format
PDU	Power Distribution Unit
PSCC	Prospective short circuit current
QA	Quality Assurance
SABS	South African Bureau for Standardisation
SANS	South African National Standard
V	Volt

5 GENERAL INFORMATION

5.1 CABINET SIZES

Broadband Infraco requires different cabinet sizes as detailed in Table 2.

Name	Width [mm]	Depth [mm]	Usable Space [U]
600mm (wall mounted)	600	600	9
600mm	600	600	42
600mm (split cabinet)	600	600	42
1000mm	600	1000	42
1200mm	600	1200	42

Table 2: Cabinet Sizes

Throughout this specification, containers are referred to by “Name” to distinguish between different sizes.

6 SPECIFICATION

The technical requirements of the cabinets are specified in the following sections.

6.1 GENERAL REQUIREMENTS

1. All the cabinets must be floor mountable except for the 600mm (Wall mounted) which needs to be wall mounted.
2. Cable entry must be possible from the top and the bottom of the cabinet as per ETS 300-119. In the case of the 600mm (wall mounted) cabinet cable access should be available from top and bottom of the cabinet.
3. The material used to manufacture the cabinet must be mild steel sheet.
4. The cabinet must be welded (no pop rivets are allowed in the construction of the cabinet), and the cabinet’s construction must include the sides, roof plate, base plate and doors.
5. The sides of the cabinets, except for the 600mm (Wall mounted) cabinet must be removable to accommodate inter-cabling of racks standing side-by-side.
6. Adjustable frame mounting equipment brackets for 19” rack mountable equipment (IEC Publication 60297) must be provided and fitted to the front of the cabinet.
7. The supplied punch profile on the 19’’ frame should be catered for throughout the whole frame (top to bottom) and should be able to support a minimum weight of 300kg per cabinet. The punch profile of the wall mounted cabinet should support an equipment weight of 50kg.
8. All cabinets should have a minimum rating of IP20 according to SANS 60529.
9. Brackets that will support the installation of equipment trays requiring additional support at the back must be (not required for 600mm wall mounted cabinet):
    a) provided and fitted to the back of the cabinet;
    b) mounted on slotted rails to allow for fitting at various depths in the cabinet; and
    c) fitted and supported at the top, centre and bottom of both sides of the cabinet frame.
10. The cabinet must be fitted with suitable powder coated cable trays to allow for internal wiring. The trays must not obstruct the mounting of equipment or equipment trays.

6.2 DIMENSIONS

1. The overall dimensions of the floor mounting cabinet options of Table 2 must be as follows:
   a) Width: 600mm (No protrusions to exceed this dimension);
   b) Depth: 600mm, 1000mm or 1200mm (as per options of Table 2);
   c) The maximum height (including the gland plates and base-plate) of the floor standing cabinets shall not be more than 2200mm. The overall height of the 42U cabinets specified must be stated; and
   d) The maximum height of the 600mm wall mounted cabinets shall not be more than 800mm. The overall height of the cabinet must be stated.

6.3 BASE PLATE/MOUNTING MECHANISM OF CABINETS

1. The floor mounting cabinets should be fitted with suitable base plate.
2. Mounting holes must be provided in the base plate to accommodate the following mounting methods.
   a) For concrete floor installations: Minimum 2 x M8 or M10 Rawl bolts should be used to secure the cabinet to the floor. (Refer to figure 1); and
   b) For containerized installations:
      i. If the cabinet is mounted inside a container before the container is transported, the cabinet must be mounted to the floor minimum 2 x M8 or M10 stainless steel bolts right through the floor with stainless steel washers with an outer diameter of at least 50mm. The outside (underneath the container floor) must be sealed with an appropriate sealant to prevent ingress of moisture. (Refer to figure 1);
      ii. If the cabinets are mounted in a container after the container was transported to site it must be mounted to the floor with four self-tapping chip board screws and washers with a shaft diameter of at least 3mm and 25-30mm long; and
      iii. Provision/access holes should be made for a fastening of the rawl bolts in all cases. These holes should be covered with removable insert.

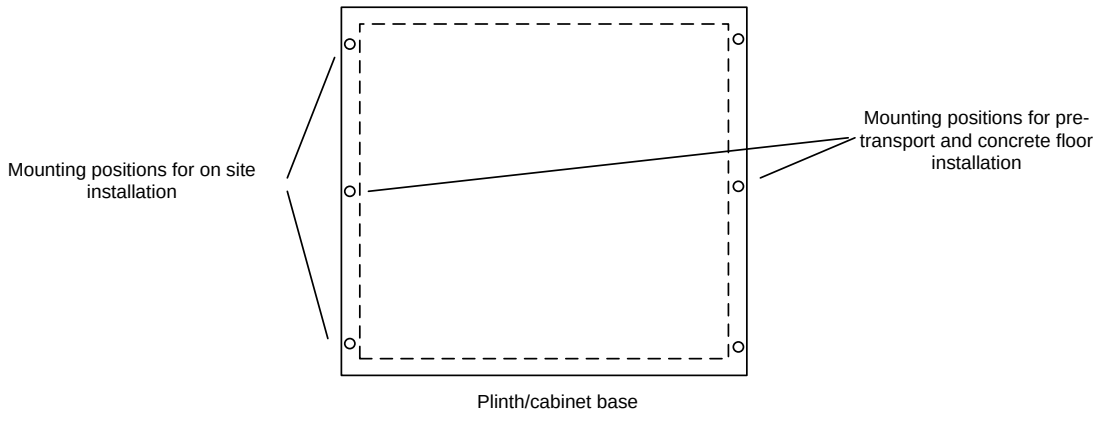

Figure 1: Floor mounting of cabinets

3. The overall dimensions of the cabinet base plate must be as follows:
   a) Width: 600mm; and
   b) Depth: 600mm, 1000mm or 1200mm (as per options of Table 2).
4. The base plate must be fitted with removable and height-adjustable feet.
5. The mounting of the 600mm wall mounted cabinets should be able to be mounted against a wall.
6. Mounting holes must be provided on the 600mm wall mounted cabinet at the back plate to accommodate suitable rawl bolts. It should be able to support the weight of the cabinet and the installed equipment. (Refer to 6.1.7.)

6.4 GLAND PLATES/CABLE ENTRIES

1. Gland plates must be able to fit at the top (roof plate) and the bottom (base plate) of all the floor standing cabinets. The top and the bottom gland plates should preferably be interchangeable.
2. The gland plates must be removable and have perforated holes (which are easy to push out) for cable termination as per 6.4.3.1 and 6.4.3.2;
3. The cable entry for the wall mount cabinet must be fitted with brushed cable entry system
4. The same removable plate should be used for both the auxiliary and Patch/ODF cabinets:
   a. Auxiliary cabinets

Auxiliary cabinets must have three holes. Three 35mm holes, one for fibre and one for data/electrical cables and the third for the DC supply to the cabinet. All the holes must enter into the cabinet itself and the holes must be fitted and seaed with glands that will accommodate a 35mm Sprague tube. The exact positioning of these holes will be determined by the overhead racking but should preferably be positioned towards the right and centre of the cabinet when facing the front of the cabinet. See figure 2.

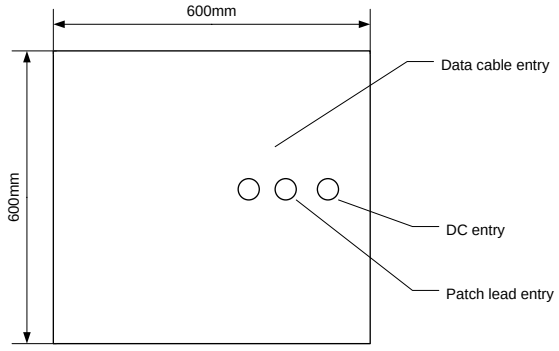

Figure 2: Auxiliary cabinets cable entries

b. Patch/ODF cabinet

The patch/ODF cabinet must have four holes. Two holes that will accommodate 25mm compression glands and two 35mm holes that will accommodate glands for patch leads to enter the cabinet. The fibre cable must preferably enter the cabinet at the left back side and the patch cable entries must be positioned at the right and centre of the cabinet roof. See figure 3.

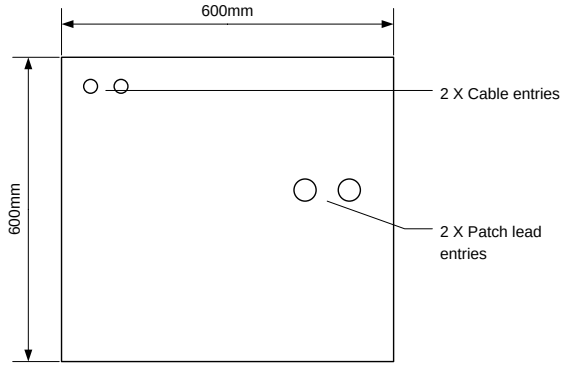

Figure 3: Patch/ODF cabinets cable entries

5. Holes must be provided for fastening down the gland plates to fixed studs on the cabinet. Externally serrated washers must be used between the gland plate and the nut.
6. Gland plates must be earthed to the common earth bar with a minimum of 6mm2 earth cable.
7. Cable entry holes (at least two per side) should be available on both side panels of the 600mm wall mounted cabinet.

6.5 DOORS

1. Steel doors must be provided for the front and back of all cabinet sizes listed in Table 2..
2. Front and rear doors must be provided in the following profile option:
    a. Perforated.
3. The 600mm (Wall mounted) cabinets needs to have a perforated steel door in the front.
4. Bolts must be welded to the top and the bottom of all doors on the hinge side, to which the braided earth straps must be connected.
5. Front and rear doors must be fitted with a lockable closing mechanism. Various locks are required depending on application (some instances the same lock will be required for a variation of cabinets while in other cases individual unique locks are required for hosting purposes).
6. Both doors must be fitted with stiffeners to make the door more rigid.
7. All doors must be fitted to the cabinet with lift-off hinges, to facilitate easy removal of the

doors when in the open position (after disconnection of the braised earth straps).

8. The doors must be hinged on the right, in order to open left-to-right.

6.6 SPLITTING OF CABINETS INTO SECTIONS

1. The 600mm (split cabinets) should be split in two sections of equal sizes.
2. The front door and back door should also be operating in two sections (or equivalent mechanism) with their own unique locks to restrict access to one section only.
3. The standard supplied 600mm split cabinets should be able to be converted, when the need arises, to a full cabinet with no partition. The material required for implementing this conversion should be available as a separate/optional kit.

6.7 EARTHING

1. The cabinet must incorporate a copper earth bar running vertically inside at the rear of each side of the cabinet. The earth bar must be fastened to the cabinet using externally serrated washers, which will ensure that the earth bar is metallically bonded to the cabinet.
2. The earth bar must have a preferred minimum dimension of 25mm x 3mm, with tapped holes equally spaced throughout the whole bar. Each tapped hole must be fitted with a stainless steel nut and bolt, with externally serrated washers.
3. The cabinet earth bar must incorporate at least two (2) compression type terminals (or equivalent) at the top and the bottom of the cabinet, suitable for accommodating at least two (2) crimp lugs (16mm2).
4. All earth points are to be free of paint or any other non-conductive material.
5. During the assembly of the cabinet, the braided copper earth straps must be fitted with suitable lugs and externally serrated washers to ensure proper metallic bonding of all cabinet parts.
6. The gland plate, the mounting equipment brackets for 19” rack mounting, as well as the front and rear doors must be connected to the earth bar with a minimum 6mm2 cross-sectional area earth braid (or equivalent).

6.8 DC POWER DISTRIBUTION

1. If required, the cabinet must be fitted with a steel DC power distribution rail and a separate face plate at the top of the cabinet.
2. All shelves shall be SANS 10142-1 compliant and shall have an IP rating of IP 3X when any door or cover are removed without the use of a tool or key. It shall still be possible to install

the required cables during installation and later additions. Refer to SANS IEC 529 for details on the IP ratings.

Item	Equipment description	Rating of board	Height	Width	Amount of Circuit breakers	Feed	PSSC
1	100A (1Pole)	100A (1 Pole)	3U	19'' mount-able	(5 per feed) 1 x32A and 4 x 6A circuit breakers	Dual feed	10kA

Table 3: DC Power rail

3. The DC power distribution rail must be based on DIN-rail to allow for easy expansion or change of circuit breakers in future.
4. The DC power distribution rail must make provision for connection to two independent main DC supplies (A and B feeds) to the cabinet to enter from top and bottom of the power rail.
5. The DC power distribution rail must make provision for connection for two independent main DC supplies of sizes 50mm ² cables for the main feed (A and B feed) and each load breakers for a cable size up to 16mm ² cables.
6. All shelves shall be designed that the front plate can be removed during operation without loosening of the shelf self when installed in a cabinet or any suitable 19'' frame.
7. It should be possible to install and de-install DIN rail circuit breakers with no complex manoeuvring of movements and resulting no impeding on the operations of adjacent circuit breakers during maintenance and or expanding of circuits.
8. All circuit breakers/switch dis-connectors should be standard 18mm DIN rail mountable circuit breakers which are rated and certified for minimum 15 kA short circuit current at 48V according to IEC/EN 60947-2, with isolating properties.
9. One earth stud shall be provided on the backplane for connection of an earth cable.
10. The positive terminals of the distribution shelf should be all common to each other.
11. All distribution shelves shall be labelled with the following signs:
    a. A sign stating "- 48V DC Power – Positive earth";
    b. Shall be labelled according to the current and rating of the distribution board (black on yellow);
    c. Shall be labelled indicating the certified fault current rating of the shelf i.e.10kA (black on yellow);
    d. All appropriate electrical and safety danger signs as per SANS 10142-1 should be displayed;
    e. All circuit breaker positions shall be labelled with the following number scheme (black on yellow):

i. A 1, A 2…….A5 for the A feed
ii. B1, B2……..B5 for the B feed.

f. All switch dis-connectors shall be labelled be either “Switch dis-connector A” (for the A-feed) or “Switch dis-connector B” (for the B-feed); and
g. All switch dis-connectors shall have the following label next to it: “This switch dis-connector shall be switched off in the event of inadvertent contact or leakage”.

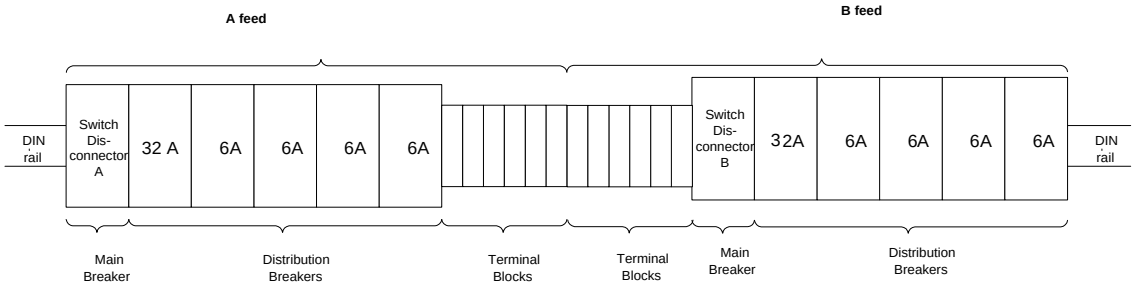

Figure 3: DC Power Distribution Rail Configuration

6.9 AC POWER DISTRIBUTION

If required, the cabinet must be fitted with power distribution units (PDU).

1. The AC PDU must be provided in the following options:
    a. Minimum 5 x SABS 164-4 (use for red plug with a 0° rotational position of the earth pin) female socket outlets, with each PDU having a rated current of 20A and a build-in over-load protection.
    b. Minimum 5 x IEC 60320 C13 female socket outlets, with each PDU having a rated current of 20A and a build-in over-load protection.
    c. Minimum 10 x SABS 164-4 (use for red plug with a 0° rotational position of the earth pin) female socket outlets, with each PDU having a rated current of 32A and a build-in over-load protection.
    d. Minimum 10 x IEC 60320 C13 female socket outlets, with each PDU having a rated current of 32A and a build-in over-load protection.
    e. If two independent main AC supplies (A and B feeds) to the cabinet exist, an AC PDU must be provided for each of the AC supplies

Figure 6.2: SABS 164-4 male plug (Red plug with a 0° rotational position of the earth pin) to be used in conjunction with equivalent SABS 164-4 female socket

Figure 6.3: IEC 60320 C13 female socket

Figure 6.4: IEC 60320 C14 male plug inlet to be used in conjunction with the IEC 60320 C13 female socket

6.10 PREPARATION OF SURFACE

1. The cabinet must be powder coated.
2. The cabinet frame and steel doors must be provided in the following colour options:
    a. Light grey (G29, SANS 1091), or
    b. Black
3. Any other colour the supplier wants to propose will be subject to Broadband Infraco's approval.

6.11 DISTRIBUTION FRAMES AND PATCH PANELS

1. Distribution frames and patch panels frames or patch panels must be mounted in the Patch panel/ODF cabinets starting from the top of the cabinet. A space of 4U must be left at the top (first panel) and every consecutive panel must be mounted with a space of 2U between panels.
2. All the mounting holes on any panel shall be used and the panel shall be secured with cage nuts and screws with plastic washers.
3. All the panels shall be marked with a label as per the Broadband Infraco naming convention.
4. All cables terminating on these panels shall be arranged neatly and in such a way that it will not obstruct the pulling in of new cables and patch leads nor in such a way that damage can occur if a panel is opened or moved if the design of the panel requires it to open or move.
5. Cable slack management trays or brackets must be fitted at the interior side walls of the cabinet

6.12 COOLING

The following cooling options should be available for extracting various heat loads from various cabinets

1. Fan tray to be available and to be installed at the top of the various cabinets to extract up to 2.5kW of heat from cabinet with the following minimum specifications:
   - Must be -48V DC Fans consisting of one or multiple fans in parallel;
   - Low power consumption as per below table;
   - Temperature range: -0 °C to +55 °C;
   - Air flow and heat extraction as per below table.

Option	Cabinet depth	Air flow (m^3/h)	Power Consumption	Heat removal from the cabinet
1. Standard load	600mm	500	<25Watts	Min 0.6 kW
2.	600mm	1000	<50Watts	Min 1.5 kW
3.	1000mm	1500	<60Watts	Min 2.5 kW

2. Cabinet cooling unit for very high heat loads where the loads will be more than 2.5kW up to 7kW with the following minimum specifications:
   - Split units with indoor unit to be installed in a cabinet and the outdoor unit to be installed against the wall of the container and or building wall.

- 19” racks installation with a close temperature control;
- Design for continuous usage for 24hours/7 days a week/ 365 days a year;
- Brushless DC inverter driven compressor;
- The air conditioner should be able to operate in the following outside ambient temperature range
    - At least down to - 5 degrees Celsius;
    - At least up to 45 degrees Celsius.
- R410A refrigerant;
- The air conditioner should be able to auto restart. When there is electricity failure the system shuts off. After restoration of the power, unit will start in the same set conditions prior to the power failure
- The air conditioner should have a self-diagnostic feature and be able to detect what is faulty with the air conditioners and indicate the required error code and or message accordingly;
- The air conditioner should have an onboard memory so that after mains restoration and/or after mains failure the condition of on / off condition, operating mode (cooling/heating), set temperature and fan speed must be remembered
- Piping length between the indoor and outdoor unit should be able to operate with a distance of at least 10m;
- The air conditioner and spares must be locally available in South Africa and must be supported by any local company in all provinces;
- The supplier shall offer training to Infraco on request covering aspects like installation, maintenance and or fault finding;
- Power Supply – 230V 50Hz 1 Phase ; and
- Warrantee of minimum 36 months.

Option	Cooling Capacity	Power input	Indoor dimensions	Heat removal from the cabinet
1	12000 BTU	1.2kW	19inch x 300mm high x 600mm deep	3.5kW
2	24000 BTU	2.4kW	19inch x 300mm high x 600mm deep	7kW

6.13 INSTALLATION OF CABINETS

1. All panels and or cabinets with all optional items shall be inspected before installation to

ensure that it complies with the Broadband Infraco requirements (this specification). This inspection should also ensure that all panels shall not be damaged, clean and free of any dust, corrosion, dents and scratches with all covers mounted securely in their correct positions.

2. Cabinet(s) should be securely mounted so that they cannot unduly be moved when bumped or leaned against.
3. The cabinet must be levelled and mounted squarely (in parallel) to its adjacent cabinets or walls.
4. Any floor cable access holes or top access brackets must be pre-provided so that the rack does not have to be moved to create any additional cable access holes or mounting brackets in the future.
5. The front of the cabinet should be flush with any adjacent cabinet and all cabinet doors must be able to be opened and un-obstructed by any other infrastructure or future cabinet positions.
6. The cabinet should be labelled to indicate purpose, floor position and power distribution feed, this labelling must conform to the station floor plan and documentation.
7. Where the cable entry will be from top, wiremesh trunking must be installed from the fixed structure to the cabinet

6.14 DELIVERY

1. All cabinets shall be inspected by either a contractor (if agreed by Broadband Infraco) or Broadband Infraco employee for damages as well as in confirming that the cabinets complies with the Broadband Infraco requirements before any delivery may take place.
2. Should the cabinet not qualify to the mentioned criteria it may not be received.
3. Should it be required that a cabinet be transported to site it shall be wrapped in a protective material such as bubble wrap and secured for transportation.

6.15 OPTIONS

1. The standard configuration for of cabinets listed in Table 2 include all the requirements as specified above in the following sections:
    a. General Requirements (6.1);
    b. Dimensions (6.2);
    c. Base Plate/mounting mechanism of cabinets (6.3);
    d. Gland Plates/cable entries (6.4) – at the top, bottom or both;
    e. Perforated steel doors for floor standing cabinets and glass door for wall mounted cabinets (6.5);
    f. Earthing (6.7); and

g. Preparation of Surface (6.10)

2. Cabinets listed in Table 2 must be provided with the optional items as and when required as specified above in the following sections:
    a. Splitting of cabinets (conversion kit from split cabinet to full cabinet) (6.6);
    b. DC Power Distribution (6.8) ;
    c. AC Power Distribution (6.9);
    d. Preparation of Surface (6.10)– colour of cabinet; and
    e. Providing of fan tray at the top of the cabinet for heat loads up to 2.5kW must be provided as per paragraph 6.12
    f. Providing of Rack cooling for very high heat loads in the 1000mm cabinets as per paragraph 6.12

6.16 COMPLIANCE TO STANDARDS

1. The supplier must state its level of compliance to international standards such as ETS 300 119 and IEC 60297

6.17 PACKAGING

1. All cabinets must be protectively packaged in such a way that it can be safely transported, handled and stored at the delivery destination, e.g. the use of bubble wrap and extra protective material on cabinet corners.
2. The packaging must be appropriate for the type of transport used and must be to Broadband Infraco's approval

6.18 DRAWINGS AND BROCHURES

1. Suppliers must provide Broadband Infraco with a full set of the actual cabinet drawings and all brochures of cabinet, cabinet ranges, breakers, fans and air conditioners.
   Drawings must be supplied in both of the following formats:
2. Hard copy, A3 paper size
3. Electronic copy, in Portable Document Format (PDF) and / or compatible with Microsoft Visio Viewer.

6.19 QUALITY ASSURANCE

1. The premises, facilities, procedures and Quality Assurance (QA) programmes of local manufacturers may be inspected and approved by Broadband Infraco prior to the commencement of local manufacture.
2. All equipment (and drawings) must be approved by Broadband Infraco before any final manufacturing and or delivery should take place.
3. A sample cabinet could be called for and inspected by Broadband Infraco during the tender evaluation process

7 APPENDICES

Selected schedule(s) are found in the appendices and forms part of this specification.

7.1 APPENDIX A: SCHEDULE OF COMPLIANCE / NON-COMPLIANCE / INFORMATION

Suppliers are required to complete this schedule and must take note of the following:

1. A detailed statement of compliance or non-compliance, accompanied by reasons (if any) for every requirement called for in the specification, must be submitted. The detailed statements must be in the format as provided in Schedule A. Where needed, further notes may also be appended to the schedule.

2. It must be clearly stated whether the equipment offered, for each of the specified requirements, is:
    - **Fully Compliant**, or
    - **Non-compliant**

3. Phrases such as "**noted**" must only be used against paragraphs that are for information only and carry no contractual commitment.

4. Phrases such as "**noting**", "**will comply**" and "**comply, except**", in a paragraph that requires a compliance or non-compliance statement will be read as non-compliance.

END

APPENDIX A : SCHEDULE OF COMPLIANCE / NON-COMPLIANCE / INFORMATION

GENERAL INFORMATION			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
600mm (wall mounted)			
600mm			
600mm (split cabinet)			
1000mm			
1200mm			
General Requirements			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.1.1			
6.1.2			
6.1.3			
6.1.4			
6.1.5			
6.1.6			
6.1.7			
6.1.8			
6.1.9			
6.1.9 (a)			
6.1.9 (b)			
6.1.9 (c)			
6.1.10			

Dimensions			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.2.1 (a)			
6.2.1 (b)			

6.2.1 (c)			
6.2.1 (d)			

Base Plate/mounting mechanism			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.3.1			
6.3.2			
6.3.2.(a)			
6.3.2.(b)			
6.3.2.(b.i)			
6.3.2.(b.ii)			
6.3.2.(b.iii)			
6.3.3			
6.3.3.(a)			
6.3.3 (b)			
6.3.4			
6.3.5			
6.3.6			

Gland Plates/cable entries			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.4.1			
6.4.2			
6.4.3			
6.4.			
6.4.(a)			
6.4.(b)			
6.4.4			
6.4.5			
6.4.6			

6.4.7			

Doors			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.5.1			
6.5.2 (a)			
6.5.3			
6.5.4			
6.5.5			
6.5.6			
6.5.7			
6.5.8			

Splitting of cabinets			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.6.1			
6.6.2			
6.6.3			

Earthing			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.7.1			
6.7.2			
6.7.3			
6.7.4			
6.7.5			
6.7.6			

DC Power Distribution			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**

6.8.1			
6.8.2			
6.8.3			
6.8.4			
6.8.5			
6.8.6			
6.8.7			
6.8.8			
6.8.9			
6.8.10			
6.8.11			
6.8.11.a			
6.8.11.b			
6.8.11.c			
6.8.11.d			
6.8.11.e			
6.8.11.e.i			
6.8.11.e.ii			
6.8.11.f			
6.8.11.g			

AC Power Distribution			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.9.1			
6.9.1 (a)			
6.9.1 (b)			
6.9.1 (c)			
6.9.1 (d)			
6.9.1 (e)			

Preparation of Surface			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.10.1			
6.10.2 (a)			
6.10.2 (b)			
6.10.3			

Distribution frames and patch panels			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.11.1			
6.11.2			
6.11.3			
6.11.4			
6.11.5			

Cooling			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.12.1			
Bullet 1			
Bullet 2			
Bullet 3			
Bullet 4			
Bullet 5			
Option 1			
Option 2			
Option 3			
6.12.2			
Bullet 1			
Bullet 2			
Bullet 3			

Bullet 4			
Bullet 5			
Bullet 6			
Bullet 7			
Bullet 8			
Bullet 9			
Bullet 10			
Bullet 11			
Bullet 12			
Bullet 13			
Bullet 14			
Option 1			
Option 2			

Installation of cabinets			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.13.1			
6.13.2			
6.13.3			
6.13.4			
6.13.5			
6.13.6			
6.13.7			

Delivery			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.14.1			
6.14.2			

6.14.3			

Options			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.15.1 (a)			
6.15.1 (b)			
6.15.1 (c)			
6.15.1 (d)			
6.15.1 (e)			
6.15.1 (f)			
6.15.1 (g)			
6.15.2 (a)			
6.15.2 (b)			
6.15.2 (c)			
6.15.2 (d)			
6.15.2 (e)			
6.15.2 (f)			

Compliance of Standards			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.16.1			

Packaging			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.17.1			
6.17.2			

Drawings

Specification		Fully Compliant / Non-compliant / Noted	Comments (if applicable)
6.18.1			
6.18.2			
6.18.3			

Quality Assurance			
Specification		**Fully Compliant / Non-compliant / Noted**	**Comments (if applicable)**
6.19.1			
6.19.2			
6.19.3			