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Project 4790794697

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REPORT

on

FLAME-RESISTANT CLOTHING FOR PROTECTION OF INDUSTRIAL PERSONNEL AGAINST
SHORT-DURATION THERMAL EXPOSURES FROM FIRE
(QGWB)

Under the

CLASSIFICATION PROGRAM

G D International
Kanpur, Uttar Pradesh, India

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DESCRIPTION

PRODUCT COVERED

Clothing Item Type	Model/Style	Closure	RCWI Layer ¹ [Y/N/NA]	Optional Venting [Y/N]	Figure(s)
Coverall	GDIxxOVL	Zipper & Snap Front Closure	NA	N	1 - 4
	GDIxxWOVL	Zipper & Snap Front Closure	N	N	5 - 8
Shirt	GDIxxSHT	Snap Front Closure	NA	N	9 - 12
Jacket	GDIxxJKT	Zipper & Snap Front Closure	NA	N	13 - 16
	GDIxxWJKT	Zipper & Snap Front Closure	N	N	17 - 19
Trousers	GDIxxTRS	Button & Zipper Front Closure	NA	N	20 - 23
NOTE: 'xx' denotes Proprietary Outer Shell Fabric style number used in the construction of the Garment, refer to Proprietary Outer Shell Materials on Page 3.					

¹Additional product label requirements apply for garments with "Removeable Cold Weather Insulation" (RCWI) Layers.

²Garments are permitted to contain venting materials, where use does not exceed 465 cm², or when covered by an outer shell fabric as described in sections A.1 and/or A.2 of this report.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE)

These clothing items are Classified in accordance with NFPA 2112, Standard on Flame-Resistant Clothing for Protection of Industrial Personnel Against Short-Duration Thermal Exposures from Fire, 2023 Edition.

This Standard specifies minimum performance requirements and test methods for flame-resistant fabrics and components and design and certification requirements for clothing items for use in areas at risk from flash fires.

This Standard provides minimum requirements for the design, construction, evaluation, and certification of flame-resistant garments, shrouds/hoods/balaclavas, and barrier face coverings for use by industrial personnel, with the intent of not contributing to the burn injury of the wearer, providing a degree of protection to the wearer, and reducing the severity of burn injuries resulting during egress from or accidental exposure to short-duration thermal exposures from fire.

This Standard shall not apply to protective clothing for wildland fire-fighting, technical rescue, structural fire-fighting, proximity fire-fighting, or any other fire-fighting operations or hazardous materials emergencies. This Standard shall not apply to single-use or limited-use garments. This Standard shall not apply to protection from electrical flashes, radiological agents, biological agents, or hazardous materials.

CLOTHING ITEM CONSTRUCTION DETAILS

A. OUTER SHELL FABRICS

1. RECOGNIZED OUTER SHELL MATERIALS (QGWB2)

The following outer shell fabrics may be used in any garment, shroud/hood/balaclava, or barrier face covering and may also be used as pocketing, lining or reinforcement.

Fabric Manufacturer	Style Designation	Weight (oz/yd ²)
Not Applicable		

2. PROPRIETARY OUTER SHELL MATERIALS

The following outer shell fabrics may be used in any garment, shroud/hood/balaclava, and barrier face covering and may also be used as pocketing, lining, hanger loop, or reinforcement.

Fabric Manufacturer	Style Designation	Weight (oz/yd ²)	Material Composition, Weave, Finish
G D International	GDI33	4.5	93% Meta-Aramid/ 5% Para-Aramid/ 2% Antistatic, Plain weave
	GDI49	6.7	48% Tencel (Viscose)/ 38% Modacrylic/ 12% Para-Aramid/ 2% Antistatic, 2/1 Twill weave

2a. PROPRIETARY OUTER SHELL FABRIC RATINGS

NFPA 2112-2023 Edition

Fabric Style Designation	Manikin Test (Average Predicted Percent Body Burn)
GDI33	29
GDI49	14

CLOTHING ITEM CONSTRUCTION DETAILS (CONT'D)

B. COMPONENTS

1. COLD WEATHER INSULATION MATERIALS - Fabrics/Materials used for protection in a low-temperature environment.

1a. UL RECOGNIZED COLD WEATHER INSULATION MATERIALS (QGWB2)

Manufacturer	Style Designation	Weight (oz/yd ²)	Composition, Weave
Not Applicable			

1b. PROPRIETARY COLD WEATHER INSULATION MATERIALS

Manufacturer		Welspun Global Brands Limited				
Model		GDI33-NW				
Cold Weather Insulation Material Component Information						
Component Materials	Style	Manufacturer	Composition	Weight (oz/yd ²)	Quilting Thread	Quilting Pattern
Batting	PA Liner	Welspun Global Brands Ltd	100% Aramid	4.5 (150 GSM)	100% Meta-Aramid Thread, Arvind Ltd. (QGWB2)	4 inch x 4 inch Diamond
Facecloth	GDI33	G D Int.	Refer to Page 3	Refer to Page 3		

Manufacturer		Welspun Global Brands Limited				
Model		GDI49-NW				
Cold Weather Insulation Material Component Information						
Component Materials	Style	Manufacturer	Composition	Weight (oz/yd ²)	Quilting Thread	Quilting Pattern
Batting	PA Liner	Welspun Global Brands Ltd	100% Aramid	4.5 (150 GSM)	100% Meta-Aramid Thread, Arvind Ltd. (QGWB2)	4 inch x 4 inch Diamond
Facecloth	GDI49	G D Int.	Refer to Page 3	Refer to Page 3		

CLOTHING ITEM CONSTRUCTION DETAILS (CONT'D)

C. COMPONENTS (CONT'D)

2. OTHER MATERIALS - Any additional materials used in garment construction.

2a. UL RECOGNIZED OTHER MATERIALS (QGWB2)

Manufacturer	Style Designation	Intended Use Per Table 1
Not Applicable		

2b. PROPRIETARY OTHER MATERIALS

Manufacturer	Style Designation	Description	Intended Use Per Table 1
Refer to Proprietary Outer Shell Materials	NA	NA	Pocketing, Hanger Loop, Reinforcement

TABLE 1: OTHER MATERIALS - INTENDED USE TABLE

OTHER MATERIAL	LIMITATIONS OF USE
POCKETING	Fabrics to be used only for garment pockets.
REINFORCEMENT	Fabrics/materials used in addition to the outer shell material for resistance to wear in specific locations.
LINING	Any material that is attached and used to cover or partially cover the inside surface of a flame-resistant garment.
ELASTIC	Materials for attachments and/or adjustments related to garment fit. Materials in this section are permitted to come into direct contact with the wearer's skin.
HOOK AND LOOP/PILE	
WRISTLET/ CUFF/ COLLAR/ HEM	The interface component of the clothing item that provides limited protection to garment interface areas.
WEBBING	A strong narrow closely woven fabric designed for bearing weight and used especially for straps or adjustments.
HANGER LOOP	A narrow fabric used for purposes of hanging the garment.
DRAWSTRING/CORD WITH AGLETS	A string, cord, or tape inserted into hems or casings or laced through eyelets for use controlling fullness in garments. Aglets describe the plain/ornamental tag covering the ends of the drawstring.
DRAWSTRING/CORD WITHOUT AGLETS	
VENTING MATERIAL	A fabric material used in a flame-resistant garment to aid in the transfer of air through the garment for the primary purpose of increasing the wearer's comfort. Venting materials shall not exceed 465 cm ² or shall be covered by outer shell fabric as described in sections A.1 and/or A.2 of this report.

CLOTHING ITEM CONSTRUCTION DETAILS (CONT'D)

3. METAL HARDWARE - Non-fabric, metallic components.

3a. UL RECOGNIZED METAL HARDWARE (QGWB2)

Manufacturer	Style Designation	Intended Use
Ideal Fastener	Any UL Recognized per UL Product iQ	Front Zipper Closure
YKK Snap Fasteners (Wuxi) Co. Ltd.	Any UL Recognized per UL Product iQ	Front, Sleeve, Pocket Snap Closure

4. NON-METAL HARDWARE - Non-fabric, non-metallic components.

4a. UL RECOGNIZED NON-METAL HARDWARE (QGWB2)

Manufacturer	Style Designation	Intended Use
Ideal Fastener	Any UL Recognized per UL Product iQ	Front Zipper Closure

CLOTHING ITEM CONSTRUCTION DETAILS (CONT'D)

C. COMPONENTS (CONT'D)

5. THREAD - Sewing thread used in garment construction, excluding embroidery.

5a. UL RECOGNIZED THREAD (QGWB2)

Manufacturer	Style Designation
Arvind Ltd.	Any UL Recognized per UL Product iQ

6. REFLECTIVE STRIPING - Materials used for enhancing visibility.

6a. UL RECOGNIZED REFLECTIVE STRIPING (QGWB2)

Manufacturer	Style Designation
Daoming Optics & Chemical Co. Ltd.	Any UL Recognized per UL Product iQ

CLOTHING ITEM CONSTRUCTION DETAILS (CONT'D)

C. COMPONENTS (CONT'D)

7. FR LETTERS/NUMBERS/FLAME-RESISTANT EMBLEMS - Materials used for personalization of the garment, which may include identification emblems that do not provide required labeling information. Emblems identified within this section are represented as flame-resistant and shall meet the flame resistance and heat resistance performance requirements for FR Emblems.

Component	Manufacturer	Style Designation	Description
Not Applicable			

8. GARMENT FINDINGS - Findings from any manufacturer, described below, may be used when all conditions of acceptability are met. Refer to the OTHER MATERIALS section for Hook and Loop and Elastic materials that require testing.

Component	Use(s)	Conditions of Acceptability
Interlining	Collar Stay, Placket, Cuffs, Pocket Flaps, Waistband	Textiles shall be incorporated into any garment as a layer between outer and inner layers and cover only a small portion of the overall garment.
Hook and loop/pile fastener	Closures, Adjustments	Components shall not come in direct contact with the skin.
Elastic	Adjustments	Components shall not come in direct contact with the skin.
Emblem	Shield/heraldry/printing that is painted, screened, embroidered, sewn, glued, bonded, or otherwise attached in a permanent manner. Does not include product labels containing NFPA-required or UL-required information	Emblems shall not be represented as flame resistant.

CLOTHING ITEM CONSTRUCTION DETAILS (CONT'D)

C. COMPONENTS (CONT'D)

9. LABELS - Materials used to provide marking information required by UL and NFPA 2112.

9a. UL RECOGNIZED LABELS (QGWB2)

Manufacturer	Style Designation	Attachment Method(s)	Write-In Method	Contains UL Mark [Yes/No]
Not Applicable				

9.B.1. PROPRIETARY EMBROIDERED LABELS

Manufacturer	Ruchi Enterprises (MH66624, QGWB3)
Label Style Designation	GDI33 UL Labels, GDI49 UL Labels, Wash and Care Label, Batch Label, Size Label
Label Substrate	GDI33 / GDI49 label set, 100% Polyester Weave: Satin (Main Label, UL Mark) / Damask (All other labels)
Contains UL Mark [Yes/No]	Yes
Location of UL Mark Reproduction - UL Party Site(s)	3402413
Attachment Method(s)	<input checked="" type="checkbox"/> Sewn on Single Side <input checked="" type="checkbox"/> Sewn on Top and Bottom Sides <input checked="" type="checkbox"/> Sewn around Perimeter

CLOTHING ITEM CONSTRUCTION DETAILS (CONT'D)

D. STANDARD CONSTRUCTION FEATURES

Standard Construction Feature	Clothing Item
Refer to DESIGN REQUIREMENTS PER NFPA 2112-2023	All
Cold Weather Insulation	GDIxxWOVL, GDIxxWJKT


E. OPTIONAL CONSTRUCTION FEATURES

Optional Construction Feature	Clothing Item
Reflective striping in various configurations	All
Various pocket configurations	All

DESIGN REQUIREMENTS PER NFPA 2112-2023

Garments, Shrouds/Hoods/Balaclavas
6.1.1 All flame-resistant hardware finishes shall be free of rough spots, burrs, or sharp edges.
6.1.2 Any metallic closure systems or metal components shall not come in direct contact with the body.
6.1.3 All slide fastener tape shall be made of an inherently flame-resistant fiber.
6.2 Clothing items shall be permitted to include liners in their construction including cold weather insulation materials where the liner is either integral to the garment or removable.
6.2.1 Where clothing items incorporate a cold weather insulation material as part of a removable lining system, the clothing item shall be designed such that the removable liner consisting of the cold weather insulation material cannot be independently worn.
6.3.1 Venting materials used on flame-resistant garments shall be covered by fabric meeting the requirements of this standard.
6.3.1.1 Where used on flame-resistant garments and not covered by fabric, venting materials shall not exceed 465 cm ² (72 in. ²) over the entire flame-resistant garment.

GARMENT, SHROUD/HOOD/BALACLAVA MARKING REQUIREMENTS PER NFPA 2112-2023

5.1 Product Label Requirements
5.1.1 All flame-resistant clothing shall have a product label or labels permanently and conspicuously attached to each flame-resistant garment, shroud/hood/balaclava, glove, and barrier face covering.
5.1.2 At least one product label shall be conspicuously located inside each flame-resistant garment, shroud/hood/balaclava, and glove.
5.1.3 Multiple label pieces shall be permitted in order to carry out all statements and information required to be on product label.
5.1.4 The certification organization's label, symbol, or identifying mark shall be permanently attached to the product label or shall be part of the product label.
5.1.5 All worded portions of the required product label shall be printed in English. Supplementary languages, in addition to English, shall be permitted.
5.1.6 Symbols and other pictorial graphic representations shall be permitted to be used to supplement worded statements on the label or product label.
5.1.7 Graphic representations shall be consistent to clearly communicate the intended message.
5.1.10 The product label shall also include the international symbol for "Read user instructions before use,"

5.1.11 The manufacturer shall be permitted to exclude the international symbol for "Read user instructions before use," as described in 5.1.10, when all of the information specified in 5.2.1 [user information] is provided on the product label or other labels adjacent to the product label.
5.1.12 Garments, shrouds/hoods/balaclavas, or gloves with multiple layers, including an outer layer and removable cold weather insulation layer, shall specify the certified configuration and include a warning on the label stating that all layers must be properly secured and worn in accordance with the manufacturer's instructions.
5.1.13 For garments, shrouds/hoods/balaclavas, or gloves with multiple layers that include an outer layer and a removable cold weather insulation layer, a label shall be conspicuously attached to the removable layer that states "DO NOT WEAR THIS LINER BY ITSELF. FOR COMPLIANCE WITH THE REQUIREMENTS OF NFPA 2112, THE COMPLETE CLOTHING ITEM MUST BE WORN. FOR COMPLIANCE INFORMATION, SEE THE PRODUCT LABEL ON THE OUTER CLOTHING ITEM."

Continued on Next Page

GARMENT, SHROUD/HOOD/BALACLAVA MARKING REQUIREMENTS PER NFPA 2112-2023
(CONT'D)

The items in the depiction² below are required to be on each clothing item:

The diagram shows a rectangular label with the following elements:

- Two UL Certification Mark options: a vertical "Basic Mark" (UL CERTIFIED SAFETY US E12345) and a horizontal "Enhanced Mark" (UL CERTIFIED SAFETY US E12345). Both are indicated with a "1" and a bracket.
- The word "or" between the two marks.
- The text: **"THIS CLOTHING ITEM MEETS THE REQUIREMENTS OF NFPA 2112-2023"**
- A central box containing:
 - Applicant Name/ID
 - Applicant Address
 - Country of Manufacture
 - "NFPA 2113 REQUIRES UPPER AND LOWER BODY COVERAGE."**
 - Model name, number, or design:
 - Garment ID/Lot/Serial:
 - Size:
 - Garment Materials/% Content:
 - "DO NOT REMOVE"
 - An information symbol (an open book with an 'i' inside).

Annotations on the right side of the diagram:

- Arrow pointing to the UL marks: See "UL Certification Mark Details" table below
- Arrow pointing to the NFPA compliance statement: NFPA compliance statement - all letters shall be at least 2.5 mm high.
- Arrow pointing to the NFPA required text: NFPA required text - all letters shall be at least 1.6 mm high.
- Arrow pointing to the information symbol: The international symbol for "Read user instructions before use" may be excluded when all of the information specified in 5.2.1 is provided on the product label(s).

²Information is not required to appear in the same manner.

UL Certification Mark Details
The UL Certification Mark shall appear on the product label. The Certification Mark for these products includes the UL symbol, the words "CERTIFIED" and "SAFETY," the geographic identifier(s), and a file number.
The longer dimension of the "Basic Mark," in either the vertical or horizontal version of the Enhanced Mark (indicated by "1" in the example above), shall be at least 5 mm and shall be placed in a conspicuous location.

USER INFORMATION PER NFPA 2112-2023

5.2 User Information
The manufacturer shall provide with each clothing item, at a minimum, the following instructions and information (5.2.1, 5.2.2):
Safety considerations
Limitations of use
Marking recommendations and restrictions
Warranty information
Sizing/adjustment
Recommended storage practices
Inspection frequency and details
Donning and doffing procedures
Proper use consistent with NFPA 2113
Cleaning instructions and precautions
Maintenance criteria and methods of repair where applicable
Retirement and disposal criteria
Sizing chart that indicates the range of key wearer measurements that are accommodated by each specific size of garment, shroud/hood/balaclava, glove, or rainwear.

Note: The required information may be provided either with the use of a suitable electronic link or with accompanying printed literature packaged with each clothing item.

Figure-1 Page-1



Figure-2 Page-1



Figure-3 Page-1



Figure-4 Page-1



Figure-5 Page-1



Figure-6 Page-1



Figure-7 Page-1



Figure-8 Page-1



Figure-9 Page-1



Figure-10 Page-1



Figure-11 Page-1



Figure-12 Page-1



Figure-13 Page-1



Figure-14 Page-1



Figure-15 Page-1

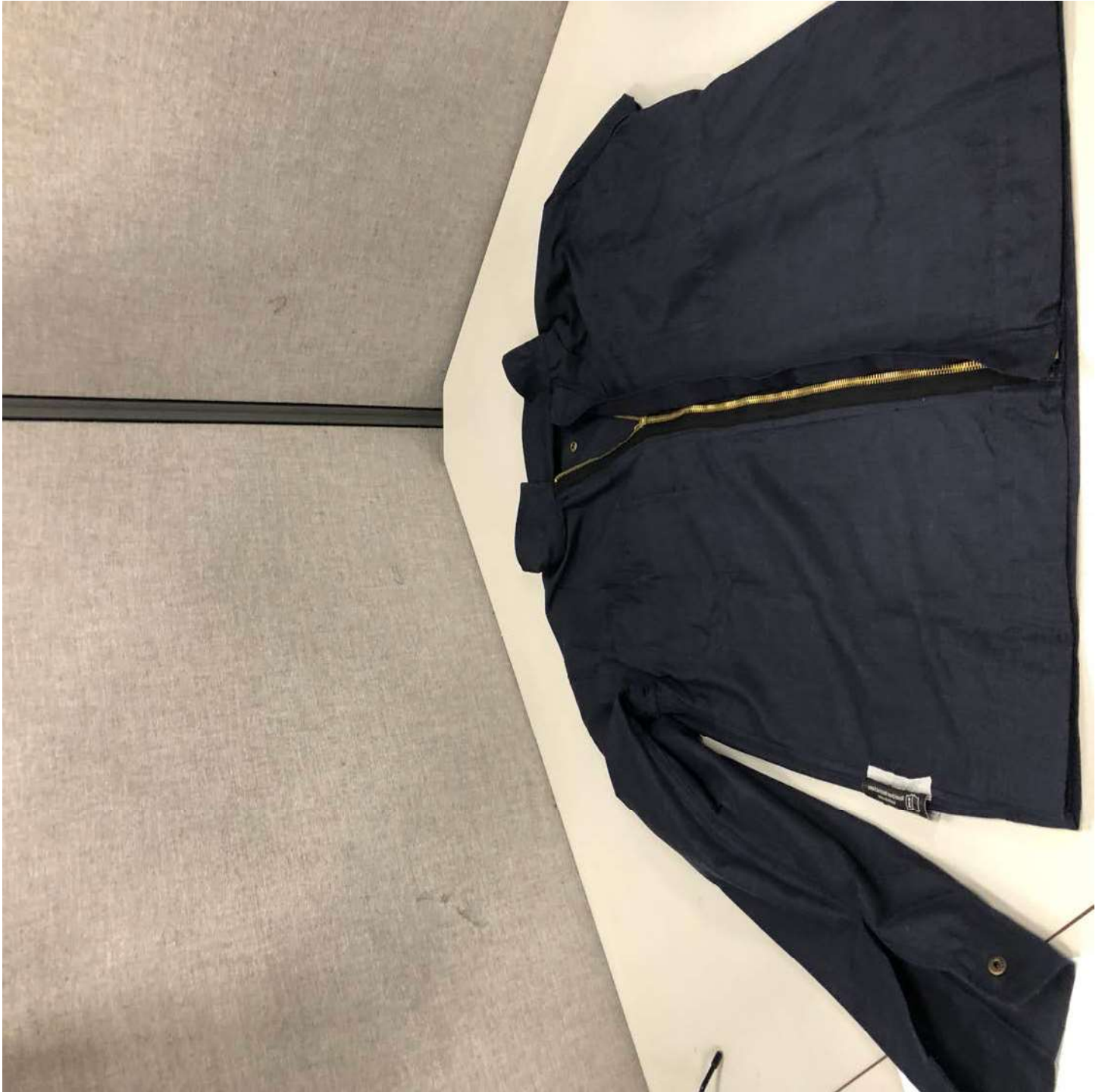


Figure-16 Page-1



Figure-17 Page-1



Figure-18 Page-1



Figure-19 Page-1



Figure-20 Page-1



Figure-21 Page-1



Figure-22 Page-1



Figure-23 Page-1

