

Your ref.: RSA-2 Road studs
Our ref.: LGT-230322-00016-1
Enquiries: Tshepang Pheelwane
Date: 2023/05/08

SIMPLE SYSTEMS
Attention : Koos van Rensburg
379 President Street
GERMISTON SOUTH
1401
Republic of South Africa

Dear Sir

With reference to your road studs (RSA-2), we have pleasure in enclosing our Test Report No. LGT-230322-00016-1 for the tests conducted on your sample.

Our invoice covering the fee charged for conducting the tests will be forwarded to you under a separate cover.

Yours faithfully



Tshepang Pheelwane
Technical Lead
Lighting Technology
SABS Commercial (SOC) Ltd
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TEST REPORT

Attention : Koos van Rensburg
SIMPLE SYSTEMS
379 President Street
GERMISTON SOUTH
1401
Republic of South Africa

SABS Commercial SOC Ltd
Lighting Technology
Private Bag X191
0001

Enquiries: T. Pheelwane
Tel: (012) 428 6038
Email: tshepang.pheelwane@sabs.co.za

Report number	: LGT-230322-00016-1
Number of pages	: 17
Date received	: 2023/03/22
Central receiving No.	: 91786
Sample condition	: Suitable for testing
Test start dates	: 2023/04/24 to 2023/05/02
Report issue date	: 2023/05/08
Supplier	: Simple Systems
Mark of manufacturer	: RSA-2

TEST DETAILS
SANS 1463-1: 2010 (Edition 2)
Road marking materials - Retroreflecting road studs
Part 1: Initial performance requirements

CONCLUSION

The sample complied with the requirements of SANS 1463-1: 2010 (Edition 2).

SABS Laboratory Services DECISION RULE:

Where the addition of the measurement uncertainty to the calculated test results leads to an inconclusive statement of conformity, but the result is within the pass criteria of the specification, the outcome shall be stated as compliance.

SIGNATURES



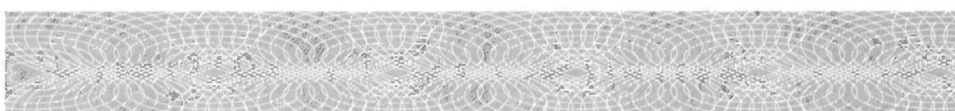
Tested by:
Kalpesh D Dhimmar
Technical Signatory



Checked by:
J. Lindeque
Technical Signatory



Approved by:
Tshepang Pheelwane
Technical Lead



TESTING TO STANDARD SANS 1463-1: 2010 (EDITION 2)

Road marking materials - Retroreflecting road studs - Part 1: Initial performance requirements

SAMPLE DESCRIPTION

Sample description	Photographs of the sample
Ten inserted lenses in polycarbonate plastic road stud bodies and ten loose acrylic lenses in white, yellow and red. The road studs were identified as RSA-2. The road studs were numbered 1 to 10 for testing purposes.	See ANNEXURE 1 and 2 for the photograph of the sample including marking and packaging label for classification

TESTS REQUESTED

The testing of road studs for compliance with the requirements of SANS 1463-1: 2010 (Edition 2). Road marking materials - Retroreflecting road studs, Part 1: Initial performance requirements.

TEST METHOD

The tests were conducted in accordance with the requirements of SANS 1463-1: 2010 (Edition 2).

TEST RESULTS

The test results are given in Table 1.

TABLE 1 – RESULTS

Requirements	Clauses	Results
Type of road stud	4	Complied
Classification by use		Permanent Type - P
Classification by reflector		Plastic Type -2
Classification by design		Non depressible Type - A
Construction	5.1	Complied- The enveloping profile of the road studs were of acceptable construction and did not present any sharp edges to the traffic
Dimensions	5.2	Complied- The height of that part of a road stud designed to be above the road surface was measured to be 20 mm. - class H 2
Maximum horizontal dimensions		Complied - Maximum horizontal dimensions of part of a road stud which is exposed to traffic after installation was measured to be 110 mm in length and 80 mm in width. - class HD 1
Night time visibility Photometric requirements Permanent road studs	5.3 - 5.3.1.1	Complied- Class PRP 1 [a] White - see Annexures 3 to 5 [b] Yellow - see Annexures 6 to 8 [c] Red - see Annexures 9 to 11
Temporary road studs	5.3.1.2	Not applicable
Colorimetric requirements	5.3.2	Complied. Class NCR 1 [a] White - see Annexure 12 [b] Yellow - see Annexure 12 [c] Red - see Annexure 12
Daytime visibility of temporary road studs	5.4	Not applicable

TABLE 1 - TEST RESULTS (cont.)

Requirements	Clauses	Results
Resilience of depressible road studs	5.5	Not applicable
Marking	7	Complied. See marking photographs of the sample
All road studs shall be clearly and permanently marked. The marking shall be on the road stud or the packaging or the accompanying commercial document		Complied. Marking was provided on the packaging
a) Name or identifying mark of the manufacturer		Complied. See marking photographs of the sample
b) The road stud type and performance classes as per clauses 4 and 5 of the this standard		Complied. Marking was provided on the packaging
Minimum information on the product : c) The name or identifying mark of the manufacturer		Complied. See marking photographs of the sample
On the packaging : d) All information given on the product , plus e) The road stud type and performance classes as identified in clauses 4 and 5		Complied. All information provided as required
On the accompanying commercial documents: f) None, if all information has been supplied on the product and packaging g) Any information which has not been given on the product or packaging		Complied. All information provided as required



ANNEXURE 1 - PHOTOGRAPHS OF THE SAMPLE WHITE , YELLOW AND RED



1 Dr Lategan Road, Groenkloof, Private Bag X191, Pretoria, 0001. Tel +27 12 428 7911. Fax +27 12 344 1568

SABS Commercial SOC Ltd conducted a conformity assessment pertaining to a sample of the product, commodity or system identified and the outcome recorded in this test report only relates to that specified sample. The conformity assessment outcomes recorded in this test report do not imply SABS Approval of the quality and/or performance of the sample(s) in question and the test results do not apply to any similar sample that has not been tested. This report may not be reproduced except in full. The authenticity of this report and its contents can be confirmed by contacting the person who signed it. (Refer also to the conditions of test printed on the last page.)

ANNEXURE 2 - PHOTOGRAPHS OF PACKAGING

379 President Street
Germiston South, 1401

CK: 1994/038257/23
VAT: 426 015 1206

.....
Simple Systems cc

02 May 2023

To whom it may concern

Brand	RSA-2	
Model	RSA-2	
Type	P2A	Permanent, Plastic, Non depressible
Dimensions	H2 HD1	height: 18mm-20mm Maximum length 250 mm, width 190 mm
Night-time visibility	PRP 1	not less than given in Table 4 (SANS 1463-1)
Colorimetric requirement	NCR 1	as specified in Table 9 (SANS 1463-1)
Daytime visibility	DCR 1	as specified in Table 10 (SANS 1463-1)
Body Color	Red/Yellow/White	
Lens Color	Red/Amber/White	

Kind Regards
JH Janse van Rensburg (Member)
koos@simple.co.za
083 280 7778

We put simplicity back in technology

ANNEXURE 3 - (WHITE 1 -4)

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (White - Type 2)

Project : LGT-230322-00016
 Client: Simple Systems
 Sample: RSA-2
 Lenses: White 1
 Test: Coefficients of retro-reflection

Date 24. Apr 2023
 Time 11:33:03
 Department Lighting Technology
 Name KD Dhimmar
 Page 1

Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	220.0		688.7 mcd/lx
V/5R	5.00	0.00	220.0		715.1 mcd/lx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	25.0		97.7 mcd/lx
V/10R	10.00	0.00	25.0		98.2 mcd/lx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	2.5		13.3 mcd/lx
V/15R	15.00	0.00	2.5		11.4 mcd/lx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (White - Type 2)

Project : LGT-230322-00016
 Client: Simple Systems
 Sample: RSA-2
 Lenses: White 2
 Test: Coefficients of retro-reflection

Date 24. Apr 2023
 Time 11:34:45
 Department Lighting Technology
 Name KD Dhimmar
 Page 1

Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	220.0		687.7 mcd/lx
V/5R	5.00	0.00	220.0		793.6 mcd/lx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	25.0		128.7 mcd/lx
V/10R	10.00	0.00	25.0		134.8 mcd/lx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	2.5		13.1 mcd/lx
V/15R	15.00	0.00	2.5		13.7 mcd/lx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (White - Type 2)

Project : LGT-230322-00016
 Client: Simple Systems
 Sample: RSA-2
 Lenses: White 3
 Test: Coefficients of retro-reflection

Date 24. Apr 2023
 Time 11:36:30
 Department Lighting Technology
 Name KD Dhimmar
 Page 1

Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	220.0		716.1 mcd/lx
V/5R	5.00	0.00	220.0		844.6 mcd/lx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	25.0		113.8 mcd/lx
V/10R	10.00	0.00	25.0		116.3 mcd/lx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	2.5		13.2 mcd/lx
V/15R	15.00	0.00	2.5		14.0 mcd/lx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (White - Type 2)

Project : LGT-230322-00016
 Client: Simple Systems
 Sample: RSA-2
 Lenses: White 4
 Test: Coefficients of retro-reflection

Date 24. Apr 2023
 Time 11:38:44
 Department Lighting Technology
 Name KD Dhimmar
 Page 1

Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	220.0		723.9 mcd/lx
V/5R	5.00	0.00	220.0		814.2 mcd/lx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	25.0		97.3 mcd/lx
V/10R	10.00	0.00	25.0		109.3 mcd/lx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	2.5		13.6 mcd/lx
V/15R	15.00	0.00	2.5		15.0 mcd/lx

Test passed

ANNEXURE 4 - (WHITE 5 -8)

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (White - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: White 5
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 11:42:52
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	220.0		733.8 mcd/tx
V/5R	5.00	0.00	220.0		815.2 mcd/tx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	25.0		113.2 mcd/tx
V/10R	10.00	0.00	25.0		135.9 mcd/tx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	2.5		13.4 mcd/tx
V/15R	15.00	0.00	2.5		15.0 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (White - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: White 6
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 11:44:54
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	220.0		811.3 mcd/tx
V/5R	5.00	0.00	220.0		819.1 mcd/tx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	25.0		100.7 mcd/tx
V/10R	10.00	0.00	25.0		98.9 mcd/tx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	2.5		11.4 mcd/tx
V/15R	15.00	0.00	2.5		10.4 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (White - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: White 7
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 11:47:08
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	220.0		759.3 mcd/tx
V/5R	5.00	0.00	220.0		751.4 mcd/tx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	25.0		110.4 mcd/tx
V/10R	10.00	0.00	25.0		119.5 mcd/tx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	2.5		10.6 mcd/tx
V/15R	15.00	0.00	2.5		10.8 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (White - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: White 8
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 11:48:49
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	220.0		647.5 mcd/tx
V/5R	5.00	0.00	220.0		610.2 mcd/tx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	25.0		111.9 mcd/tx
V/10R	10.00	0.00	25.0		106.9 mcd/tx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	2.5		17.8 mcd/tx
V/15R	15.00	0.00	2.5		19.0 mcd/tx

Test passed

ANNEXURE 5 - (WHITE 9 -10)

SABS

Photometric Test Report

SANS 1463

ROAD STUDS 1463-1 0.33 & 1 & 2 (White - Type 2)

Project : LGT-230322-00016

Client: Simple Systems

Sample: RSA-2

Lenses: White 9

Test: Coefficients of retro-reflection

Date 24. Apr 2023

Time 11:50:40

Department Lighting Technology

Name KD Dhimmar

Page 1

Channel Retro 100ft 0'20'

	H	V	MIN	MAX	SAMPLE	
V/5L	-5.00	0.00	220.0		688.7	mcd/lx
V/5R	5.00	0.00	220.0		611.2	mcd/lx

Channel Retro 100ft 1'00'

	H	V	MIN	MAX	SAMPLE	
V/10L	-10.00	0.00	25.0		113.9	mcd/lx
V/10R	10.00	0.00	25.0		104.8	mcd/lx

Channel Retro 100ft 2'00'

	H	V	MIN	MAX	SAMPLE	
V/15L	-15.00	0.00	2.5		17.5	mcd/lx
V/15R	15.00	0.00	2.5		16.6	mcd/lx

Test passed

SABS

Photometric Test Report

SANS 1463

ROAD STUDS 1463-1 0.33 & 1 & 2 (White - Type 2)

Project : LGT-230322-00016

Client: Simple Systems

Sample: RSA-2

Lenses: White 10

Test: Coefficients of retro-reflection

Date 24. Apr 2023

Time 11:52:27

Department Lighting Technology

Name KD Dhimmar

Page 1

Channel Retro 100ft 0'20'

	H	V	MIN	MAX	SAMPLE	
V/5L	-5.00	0.00	220.0		695.5	mcd/lx
V/5R	5.00	0.00	220.0		790.7	mcd/lx

Channel Retro 100ft 1'00'

	H	V	MIN	MAX	SAMPLE	
V/10L	-10.00	0.00	25.0		91.8	mcd/lx
V/10R	10.00	0.00	25.0		112.2	mcd/lx

Channel Retro 100ft 2'00'

	H	V	MIN	MAX	SAMPLE	
V/15L	-15.00	0.00	2.5		13.6	mcd/lx
V/15R	15.00	0.00	2.5		15.0	mcd/lx

Test passed

ANNEXURE 6 - (YELLOW 1 -4)

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Yellow - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Yellow 1
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 12:18:46
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20"					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	132.0		517.0 mcd/tx
V/5R	5.00	0.00	132.0		478.7 mcd/tx

Channel Retro 100ft 1'00"					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	15.0		76.5 mcd/tx
V/10R	10.00	0.00	15.0		76.3 mcd/tx

Channel Retro 100ft 2'00"					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	1.5		14.0 mcd/tx
V/15R	15.00	0.00	1.5		13.7 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Yellow - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Yellow 2
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 12:21:49
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20"					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	132.0		685.7 mcd/tx
V/5R	5.00	0.00	132.0		647.5 mcd/tx

Channel Retro 100ft 1'00"					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	15.0		168.7 mcd/tx
V/10R	10.00	0.00	15.0		164.0 mcd/tx

Channel Retro 100ft 2'00"					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	1.5		9.2 mcd/tx
V/15R	15.00	0.00	1.5		8.8 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Yellow - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Yellow 3
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 12:23:42
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20"					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	132.0		643.5 mcd/tx
V/5R	5.00	0.00	132.0		673.0 mcd/tx

Channel Retro 100ft 1'00"					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	15.0		92.0 mcd/tx
V/10R	10.00	0.00	15.0		95.8 mcd/tx

Channel Retro 100ft 2'00"					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	1.5		7.6 mcd/tx
V/15R	15.00	0.00	1.5		7.6 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Yellow - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Yellow 4
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 12:25:27
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20"					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	132.0		492.5 mcd/tx
V/5R	5.00	0.00	132.0		541.5 mcd/tx

Channel Retro 100ft 1'00"					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	15.0		73.7 mcd/tx
V/10R	10.00	0.00	15.0		78.8 mcd/tx

Channel Retro 100ft 2'00"					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	1.5		11.2 mcd/tx
V/15R	15.00	0.00	1.5		11.2 mcd/tx

Test passed

ANNEXURE 7 - (YELLOW 5 -8)

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Yellow - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Yellow 5
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 12:27:11
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20'						
	H	V	MIN	MAX	SAMPLE	
V/5L	-5.00	0.00	132.0		479.7	mcd/tx
V/5R	5.00	0.00	132.0		460.1	mcd/tx

Channel Retro 100ft 1'00'						
	H	V	MIN	MAX	SAMPLE	
V/10L	-10.00	0.00	15.0		86.8	mcd/tx
V/10R	10.00	0.00	15.0		72.6	mcd/tx

Channel Retro 100ft 2'00'						
	H	V	MIN	MAX	SAMPLE	
V/15L	-15.00	0.00	1.5		15.2	mcd/tx
V/15R	15.00	0.00	1.5		12.3	mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Yellow - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Yellow 6
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 12:29:41
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20'						
	H	V	MIN	MAX	SAMPLE	
V/5L	-5.00	0.00	132.0		496.3	mcd/tx
V/5R	5.00	0.00	132.0		488.5	mcd/tx

Channel Retro 100ft 1'00'						
	H	V	MIN	MAX	SAMPLE	
V/10L	-10.00	0.00	15.0		82.7	mcd/tx
V/10R	10.00	0.00	15.0		77.2	mcd/tx

Channel Retro 100ft 2'00'						
	H	V	MIN	MAX	SAMPLE	
V/15L	-15.00	0.00	1.5		12.9	mcd/tx
V/15R	15.00	0.00	1.5		12.9	mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Yellow - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Yellow 7
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
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Channel Retro 100ft 0'20'						
	H	V	MIN	MAX	SAMPLE	
V/5L	-5.00	0.00	132.0		506.2	mcd/tx
V/5R	5.00	0.00	132.0		455.2	mcd/tx

Channel Retro 100ft 1'00'						
	H	V	MIN	MAX	SAMPLE	
V/10L	-10.00	0.00	15.0		72.0	mcd/tx
V/10R	10.00	0.00	15.0		75.5	mcd/tx

Channel Retro 100ft 2'00'						
	H	V	MIN	MAX	SAMPLE	
V/15L	-15.00	0.00	1.5		12.9	mcd/tx
V/15R	15.00	0.00	1.5		12.2	mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Yellow - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Yellow 8
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 12:33:46
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20'						
	H	V	MIN	MAX	SAMPLE	
V/5L	-5.00	0.00	132.0		663.2	mcd/tx
V/5R	5.00	0.00	132.0		675.9	mcd/tx

Channel Retro 100ft 1'00'						
	H	V	MIN	MAX	SAMPLE	
V/10L	-10.00	0.00	15.0		100.2	mcd/tx
V/10R	10.00	0.00	15.0		99.2	mcd/tx

Channel Retro 100ft 2'00'						
	H	V	MIN	MAX	SAMPLE	
V/15L	-15.00	0.00	1.5		6.6	mcd/tx
V/15R	15.00	0.00	1.5		6.8	mcd/tx

Test passed

ANNEXURE 8 - (YELLOW 9 -10)

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Yellow - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Yellow 9
Test: Coefficients of retro-reflection

Date 24. Apr 2023
Time 12:35:35
Department Lighting Technology
Name KD Dhimmar
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Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	132.0		480.7 mcd/tx
V/5R	5.00	0.00	132.0		486.6 mcd/tx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	15.0		84.8 mcd/tx
V/10R	10.00	0.00	15.0		84.6 mcd/tx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	1.5		15.3 mcd/tx
V/15R	15.00	0.00	1.5		13.2 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Yellow - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Yellow 10
Test: Coefficients of retro-reflection

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Time 12:37:26
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Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	132.0		543.5 mcd/tx
V/5R	5.00	0.00	132.0		579.8 mcd/tx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	15.0		74.0 mcd/tx
V/10R	10.00	0.00	15.0		85.5 mcd/tx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	1.5		11.4 mcd/tx
V/15R	15.00	0.00	1.5		11.0 mcd/tx

Test passed

ANNEXURE 9 - (RED 1 -4)

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Red - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Red 1
Test: Coefficients of retro-reflection

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Time 12:39:50
Department Lighting Technology
Name KD Dhimmar
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Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	44.00		220.73 mcd/tx
V/5R	5.00	0.00	44.00		260.95 mcd/tx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	5.00		37.88 mcd/tx
V/10R	10.00	0.00	5.00		37.40 mcd/tx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	0.50		4.32 mcd/tx
V/15R	15.00	0.00	0.50		4.34 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Red - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Red 2
Test: Coefficients of retro-reflection

Date 24. Apr 2023
Time 12:42:19
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Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	44.00		232.50 mcd/tx
V/5R	5.00	0.00	44.00		259.96 mcd/tx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	5.00		36.36 mcd/tx
V/10R	10.00	0.00	5.00		37.75 mcd/tx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	0.50		4.18 mcd/tx
V/15R	15.00	0.00	0.50		4.26 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Red - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Red 3
Test: Coefficients of retro-reflection

Date 24. Apr 2023
Time 12:44:36
Department Lighting Technology
Name KD Dhimmar
Page 1

Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	44.00		226.61 mcd/tx
V/5R	5.00	0.00	44.00		254.08 mcd/tx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	5.00		35.68 mcd/tx
V/10R	10.00	0.00	5.00		33.67 mcd/tx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	0.50		4.08 mcd/tx
V/15R	15.00	0.00	0.50		4.09 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Red - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Red 4
Test: Coefficients of retro-reflection

Date 24. Apr 2023
Time 12:46:17
Department Lighting Technology
Name KD Dhimmar
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Channel Retro 100ft 0'20'					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	44.00		208.95 mcd/tx
V/5R	5.00	0.00	44.00		219.74 mcd/tx

Channel Retro 100ft 1'00'					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	5.00		27.91 mcd/tx
V/10R	10.00	0.00	5.00		29.88 mcd/tx

Channel Retro 100ft 2'00'					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	0.50		5.30 mcd/tx
V/15R	15.00	0.00	0.50		4.70 mcd/tx

Test passed

ANNEXURE 10 - (RED 5 -8)

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Red - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Red 5
Test: Coefficients of retro-reflection

Date 24. Apr 2023
Time 12:48:12
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Channel Retro 100ft 0'20"					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	44.00		222.69 mcd/tx
V/5R	5.00	0.00	44.00		230.54 mcd/tx

Channel Retro 100ft 1'00"					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	5.00		46.14 mcd/tx
V/10R	10.00	0.00	5.00		48.37 mcd/tx

Channel Retro 100ft 2'00"					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	0.50		4.37 mcd/tx
V/15R	15.00	0.00	0.50		4.56 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Red - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Red 6
Test: Coefficients of retro-reflection

Date 24. Apr 2023
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Channel Retro 100ft 0'20"					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	44.00		202.09 mcd/tx
V/5R	5.00	0.00	44.00		226.61 mcd/tx

Channel Retro 100ft 1'00"					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	5.00		33.72 mcd/tx
V/10R	10.00	0.00	5.00		36.55 mcd/tx

Channel Retro 100ft 2'00"					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	0.50		5.57 mcd/tx
V/15R	15.00	0.00	0.50		5.45 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Red - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Red 7
Test: Coefficients of retro-reflection

Date 24. Apr 2023
Time 12:51:48
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Channel Retro 100ft 0'20"					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	44.00		197.18 mcd/tx
V/5R	5.00	0.00	44.00		230.54 mcd/tx

Channel Retro 100ft 1'00"					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	5.00		35.08 mcd/tx
V/10R	10.00	0.00	5.00		34.66 mcd/tx

Channel Retro 100ft 2'00"					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	0.50		5.47 mcd/tx
V/15R	15.00	0.00	0.50		5.64 mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Red - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Red 8
Test: Coefficients of retro-reflection

Date 24. Apr 2023
Time 12:53:35
Department Lighting Technology
Name KD Dhimmar
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Channel Retro 100ft 0'20"					
	H	V	MIN	MAX	SAMPLE
V/5L	-5.00	0.00	44.00		184.53 mcd/tx
V/5R	5.00	0.00	44.00		190.02 mcd/tx

Channel Retro 100ft 1'00"					
	H	V	MIN	MAX	SAMPLE
V/10L	-10.00	0.00	5.00		37.56 mcd/tx
V/10R	10.00	0.00	5.00		38.62 mcd/tx

Channel Retro 100ft 2'00"					
	H	V	MIN	MAX	SAMPLE
V/15L	-15.00	0.00	0.50		5.99 mcd/tx
V/15R	15.00	0.00	0.50		6.76 mcd/tx

Test passed

ANNEXURE 11 - (RED 9 -10)

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Red - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Red 9
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 12:55:29
Department: Lighting Technology
Name: KD Dhimmar
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Channel Retro 100ft 0'20'

	H	V	MIN	MAX	SAMPLE	
V/5L	-5.00	0.00	44.00		209.93	mcd/tx
V/5R	5.00	0.00	44.00		216.76	mcd/tx

Channel Retro 100ft 1'00'

	H	V	MIN	MAX	SAMPLE	
V/10L	-10.00	0.00	5.00		41.21	mcd/tx
V/10R	10.00	0.00	5.00		47.57	mcd/tx

Channel Retro 100ft 2'00'

	H	V	MIN	MAX	SAMPLE	
V/15L	-15.00	0.00	0.50		4.38	mcd/tx
V/15R	15.00	0.00	0.50		4.92	mcd/tx

Test passed

SABS

Photometric Test Report
SANS 1463
ROAD STUDS 1463-1 0.33 & 1 & 2 (Red - Type 2)

Project : LGT-230322-00016
Client: Simple Systems
Sample: RSA-2
Lenses: Red 10
Test: Coefficients of retro-reflection

Date: 24. Apr 2023
Time: 12:57:21
Department: Lighting Technology
Name: KD Dhimmar
Page: 1

Channel Retro 100ft 0'20'

	H	V	MIN	MAX	SAMPLE	
V/5L	-5.00	0.00	44.0		211.9	mcd/tx
V/5R	5.00	0.00	44.0		222.7	mcd/tx

Channel Retro 100ft 1'00'

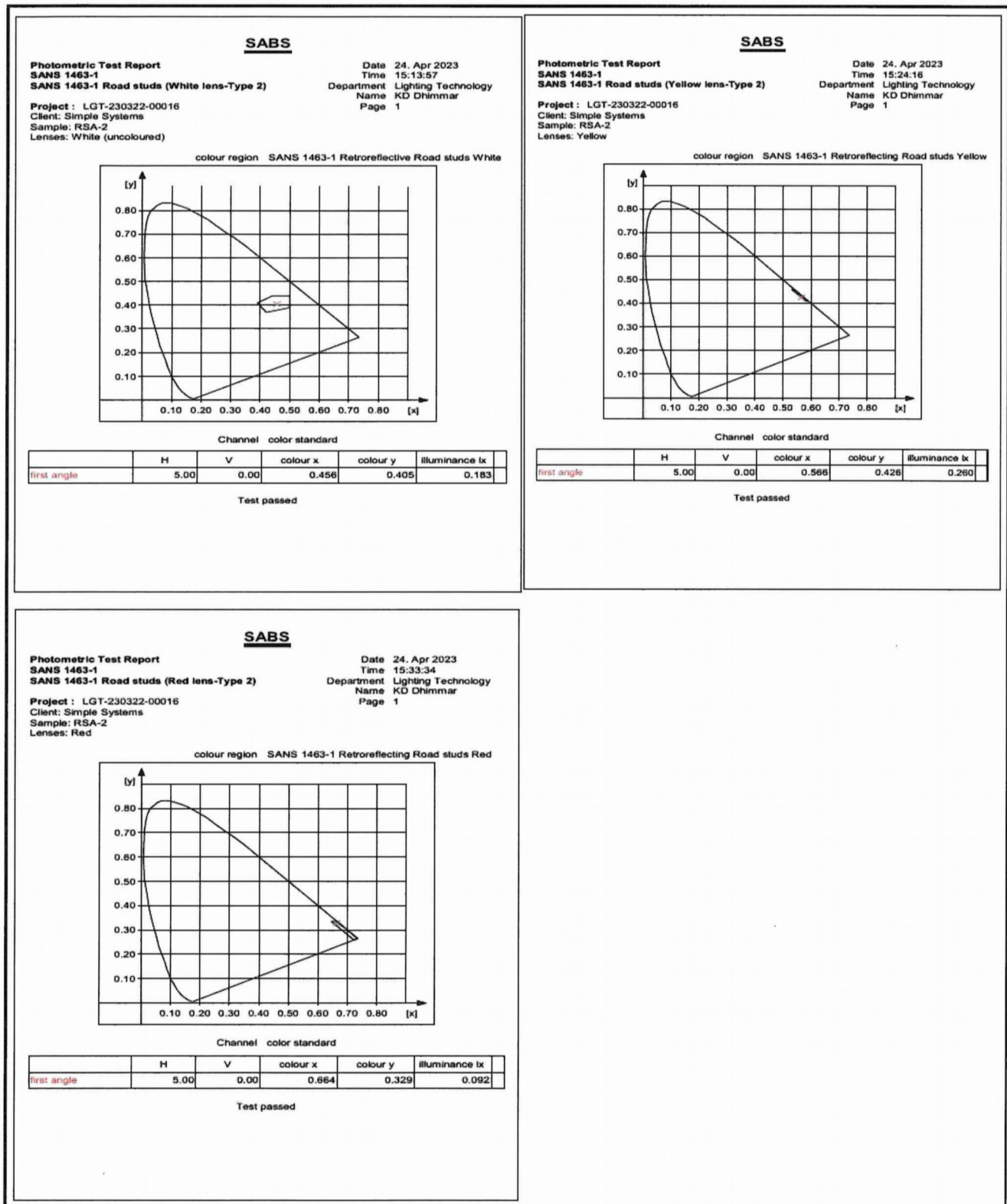
	H	V	MIN	MAX	SAMPLE	
V/10L	-10.00	0.00	5.0		41.7	mcd/tx
V/10R	10.00	0.00	5.0		42.8	mcd/tx

Channel Retro 100ft 2'00'

	H	V	MIN	MAX	SAMPLE	
V/15L	-15.00	0.00	0.5		4.5	mcd/tx
V/15R	15.00	0.00	0.5		4.7	mcd/tx

Test passed

ANNEXURE 12 - COLOUR (WHITE, YELLOW AND RED)



EQUIPMENT LIST

SANS 1463-1

Tests	Test equipment description	Test equipment accuracy Error / Deviation
Coefficients of luminous intensity (CIL)	[1] Goniometer: Optronik SMS 10 PP&E 0000732 / PP&E 0000735 [2] LMT RETRO 1000 Photo-cells (0,2 /0,12/1°,30) (PP&E 000770) [3] LMT Retro 1000 (PP&E0003791) [4] Light Source [5] Hum. & Temp. recorder: Log Tag PP&E0042990	Calibrated [1] Horizontal angle repeatability $\pm 0,039^\circ$ Vertical angle repeatability $\pm 0,003^\circ$ [2] 2,2% [3] f total < 3,0% [4] Illuminate A - Uniformity 5% [5] 0,3 °C, 0,3 % Rh
Colour - Illuminant A	[1] Colourmeter: LMT C1210 PP&E0000755 Photocell: PP&E0025795 [2] Light source (Illuminant A): PP&E0001774 [3] Hum. & Temp. recorder: Log Tag PP&E0042990	Calibrated [1] $\pm 0,003$ (x and y Co-ordinate) [2] 2856 K ± 15 K [3] 0,3 °C, 0,3 % Rh
Shape and dimensions	[1] Ruler (steel): 150 mm Shinwa LTM128 [2] Digital Vernier: IP 54 LTM 118	[1] -0,053 mm [2] 0,00 mm

Note: The equipment used for testing is calibrated and is traceable to South African National Standards

CONDITIONS

The acceptance of an item for test and the issue of a test report are subject to the SABS's Conditions of Test*, from which the following have been extracted:

1. If published or reproduced by the client, a test report shall be reproduced in full, i.e. the reproduction shall contain the printed as well as the typed parts of the report, nothing excepted. In special circumstances, an abridged form of the report or certain parts of the report may be published or reproduced, provided that the abridged form or partial version of the report is approved in writing by the CEO of the SABS before publication or issue.

2. A test report relates only to an item submitted for the actual test. It furnishes or implies no guarantee whatsoever in respect of a similar item that has not been tested.

3. The performance of a test and the issue of a test report do not imply approval by the SABS of the quality and/or performance of the item that has been tested. This does not authorize the use of a certification mark.

NOTE An unlawful statement implying that an item has been approved by the SABS constitutes a punishable offence in terms of Section 21(1) of the Standards Act.

4. While every endeavour will be made to ensure that a test is representative and accurately performed, and that a report is accurate in the quoted results and conclusions drawn from the test, the SABS or its officers shall in no way be liable for any error made in carrying out the test or for any erroneous statement, whether in fact or in opinion, contained in a report issued pursuant to a test.

*Obtainable upon request from the CEO, SABS, Private Bag X191 Pretoria, 0001.

***** THIS IS THE END OF THE TEST REPORT *****

